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PENICILLIN IN SUBACUTE BACTERIAL ENDOCARDITIS

REPORT TO THE MEDICAL RESEARCH COUNCIL ON 147 PATIENTS TREATED IN 14 CENTRES APPOINTED BY THE PENICILLIN CLINICAL TRIALS COMMITTEE

BY

Prof. RONALD V. CHRISTIE, M.D., D.Sc., F.R.C.P.

Secretary of the Committee

Only 18 months ago few patients suffering from bacterial endocarditis had been treated with penicillin in this country, and the results both here and in the U.S.A. were far from encouraging. Early in 1945 reports were received from America which suggested that better results might be obtained with larger doses given for longer periods. An attempt to determine the best system of dosage was clearly indicated, both to save life and to prevent wastage of a valuable drug still in short supply. Since subacute bacterial endocarditis is an uncommon disease, it was decided that this could be best achieved by a co-ordinated effort, and in February, 1945, an announcement was made in this *Journal* of the formation of research centres in Belfast, Bristol, Edinburgh, Leeds, Liverpool, London (St. Mary's, Middlesex, and St. Bartholomew's Hospitals), Manchester, and Sheffield. In April four further centres were formed, in Birmingham, Cardiff, Glasgow, and Newcastle. The response to this announcement can be gauged from the fact that by the end of September, 1945, the treatment of 147 patients had been completed. Since that date many more have been treated, but these will be included in a later report, as an adequate follow-up is essential in assessing the results of any treatment of this disease.

Therapeutic Results

Penicillin was given either by three-hourly injection or by continuous intramuscular infusion. No difference in the therapeutic results could be demonstrated, and opinion on the merits of these two methods is divided. Most are agreed, however, that both methods should be available if the treatment of subacute bacterial endocarditis is to be undertaken.

In the first group to be treated the dose was planned to show the relative importance of duration of treatment and the total amount of penicillin given. An answer to this question is given in Table I, which summarizes the results in 46 patients, all of whom received 5 mega (million) units of penicillin but over different periods of time: 20 patients were given 1 mega unit a day for five days, and all relapsed or died; 12 received 0.5 mega unit a day for 10 days, and of these 3 were apparently cured; 14 were given 0.25 mega unit a day for 20 days, and of these 7 have remained well. These patients have been under observation for over 6 months, and since relapses, if they occur, almost invariably take place within 6 weeks of treatment (Table V) the conclusion appears to be justified that, within these limits of dosage, the duration of treatment is of much greater importance than the total amount of penicillin given: increased dosage is no substitute for prolonged treatment.

TABLE I.—*Patients receiving a Total of 5 million Units of Penicillin, given in Courses lasting 5, 10, and 20 Days*

Dose	Died	Relapsed	"Cured"	Average Follow-up
1 mega unit for 5 days ..	6 (1) (30%)	14 (70%)	0	—
0·5 mega unit for 10 days	2 (1) (17%)	7 (58%)	3 (25%)	217 days
0·25 mega unit for 20 days	4 (3) (29%)	3 (21%)	7 (50%)	249 ,,

Figures in brackets in Tables I–IV represent number of patients in whom dosage was only approximately as stated.

The results of treatment in a further series of 66 patients are shown in Table II; all received penicillin for 28 days, but the dose was varied, one group receiving 0.1 mega unit a day, another 0.25 mega unit a day, and another 0.5 mega unit a day. In the first group 43% recovered, in the second group 50%, and in the third group 61% have remained cured after an average follow-up of 4 months. It should not be forgotten that, no matter how effective penicillin may prove to be in the treatment of this disease, a significant death rate will remain from causes such as heart failure, uraemia, and major emboli. These deaths, many of which occurred during treatment, have little or no bearing on the efficacy of penicillin, and when this is borne in mind the therapeutic results shown in Table II are all the more remarkable—11 out of 18 patients receiving 0.5 mega unit a day for 28 days have remained cured. In only 1 of the 7 patients who died was there any evidence that the penicillin had failed to control the septicaemia, and the infecting organism in this case was more than 32 times as resistant to penicillin as the standard Oxford staphylococcus. For previously untreated patients 0.5 mega unit a day for 28 days seems to be a most satisfactory system of dosage.

TABLE II.—*Patients Treated for 28 Days with a Daily Dose of 0.1, 0.25, and 0.5 Mega Unit*

Dose	Died	Relapsed	"Cured"	Average Follow-up
0·1 mega unit a day ..	3 (3) (21%)	5 (1) (36%)	6 (43%)	198 days
0·25 mega unit a day ..	13 (5) (38%)	4 (3) (12%)	17 (5) (50%)	117 ,,
0·5 mega unit a day ..	7 (39%)	0	11 (61%)	114 ,,

Another small group of 12 patients received 0.5 mega unit a day for 21 days; of these, 1 died, 2 relapsed, and 9 have remained well after an average follow-up of 244 days.

Lastly, there were 11 patients who received a system of dosage which did not fall into any of the categories described above: 5 of these died, 1 relapsed, and 5 have remained well for an average period of 172 days.

Effect of Inadequate Treatment

It is of considerable practical importance to know whether inadequate treatment, as well as wasting time and penicillin, is prejudicial to later success. The results of treatment in patients who had already received a short course of penicillin are given in Table III. A comparison of this table with Tables I and II does not suggest that previous treatment with a short course is prejudicial to later success in the patients who survive.

TABLE III.—*Patients Previously Treated with a Short Course of Penicillin, of 5–10 Days' Duration*

Dose	Died	Relapsed	"Cured"	Average Follow-up
1 mega unit for 5 days ..	0	1	0	—
0·5 mega unit for 10 days	0	0	2	220 days
0·1 mega unit for 28 days	0	2	1	232 ,,
0·25 mega unit for 20 days	4 (3)	1 (1)	3 (3)	260 ,,
0·25 mega unit for 28 days	0	3 (2)	6 (4)	162 ,,
0·5 mega unit for 28 days	0	0	3	175 ,,
Total	4 (15%)	7 (27%)	15 (58%)	

The results of treatment in patients who had already received a long course of penicillin are given in Table IV. A comparison

TABLE IV.—*Patients Previously Treated with a Course of Penicillin of 20–28 Days' Duration*

Dose	Died	Relapsed	"Cured"	Average Follow-up
1 mega unit for 5 days ..	0	1	0	—
0·5 mega unit for 10 days	0	1	0	—
0·1 mega unit for 28 days	0	0	1 (1)	214 days
0·25 mega unit for 20 days	1 (1)	1 (1)	1 (1)	200 ,,
0·25 mega unit for 28 days	2	3	2	107 ,,
0·5 mega unit for 20 days	0	1 (1)	0	—
0·5 mega unit for 28 days	2	6	4	134 ,,
Total	5 (19%)	13 (50%)	8 (31%)	

of this table with Tables I and II shows that if a patient does not respond to a long course of treatment he is less likely to respond to a second course. There are two possible explanations. Lack of response to the first course may indicate natural resistance to penicillin therapy, so that this forms a selected group of resistant cases. Alternatively, the explanation may be that an ineffectual course of treatment may increase the resistance to penicillin.

Repeated estimations of the resistance of the infecting organisms to penicillin were made in this series, but no convincing evidence of changes in sensitivity was found. Sixteen patients received more than one long course (20 days or more) of treatment, and in only two of these was there any evidence of a change in sensitivity; in both there was a threefold increase in resistance to penicillin as measured by the ordinary dilution methods. Clinical evidence bearing on the question of acquired resistance to penicillin is also meagre, and is confined to two small groups. The first group was of 7 patients in whom septicaemia was uncontrolled during treatment; in 2 it was uncontrolled from the start, but in the other 5 the infection had been previously controlled by a similar or smaller daily dose of penicillin, suggesting that resistance to penicillin had increased; in all of these 5 patients the first course, which seemed at the time to be effective, involved a daily dose of only 0.1 to 0.25 mega unit. In the second group there were 5 patients who relapsed after a second long course of penicillin; in all, the dosage of penicillin was greater in the second than in the first course, and yet the interval before relapse was decreased rather than increased.

This evidence is, to say the least, not incompatible with acquired resistance to penicillin. Delay in controlling the infection also exposes the patient to the many dangerous complications of this disease, and it is therefore safer, from the patient's point of view, to assume that inadequate treatment is prejudicial to later success.

Relapses

Short courses of treatment, of 10 days or less, are usually followed by relapse within a few days. Even after long courses most relapses occur within 30 days of cessation of treatment, and relapse after 50 days is extremely rare (Table V). The conclusions drawn from Tables I–IV, in which the period of follow-up varied from 107 to 260 days, are therefore not unreasonable. There is still, of course, the chance of reinfection, but this was proved in only one patient of this series; this patient relapsed, and *Streptococcus faecalis* was recovered from the blood 161 days after apparent cure from an infection with *Str. viridans.*

TABLE V.—*Relapses after Treatment*

Interval between Treatment and Relapse	Relapse After Treatment Lasting 20 Days or More	Relapse After Treatment Lasting 10 Days or Less
0–10 days	14	17
11–20 ,, ...	7	3
21–30 ,, ...	6	2
31–40 ,, ...	0	1
41–50 ,, ...	2	0
51–60 ,, ...	0	1
Over 60 ,, ...	1 (130 days)	

The treatment of relapses presents a special and often difficult problem. Of 16 patients who relapsed after a course of penicillin which lasted longer than 20 days, all but 4 relapsed or died after a second course which was either more prolonged or of higher dosage than the first. Four patients have received more than two long courses of penicillin, but only one of these has finally responded: she relapsed after 0.5 mega unit for 10 days, again after 0.1 mega unit for 28 days, and again after 0.5 mega unit for 28 days, but has now remained well for 60 days after a fourth course of 0.5 mega unit a day for 42 days. It is this system of dosage—0.5 mega unit a day for 6 or 8 weeks—that we propose usually to adopt in patients who have relapsed.

The Infecting Organism

Of the 147 patients included in this series 146 were infected with streptococci and one with a strain of *Haemophilus influenzae* which was almost completely resistant to penicillin. Of the streptococci 136 are described as *Str. viridans,* 8 as a non-haemolytic streptococcus, 1 as an anaerobic streptococcus, and 1 as a micro-aerophilic streptococcus. The sensitivity to penicillin was measured by the ordinary dilution methods and compared with the standard Oxford staphylococcus. To facilitate tabulation this has been expressed as a coefficient of resistance, and it is clear from Table VI that there is a surprising

TABLE VI.—*A Comparison of the Results of Treatment with the Sensitivity of the Organism to Penicillin. (Resistance is expressed as a multiple of the resistance of the standard Oxford staphylococcus.) None of these patients had previously been given a long course of treatment*

Dose		Coefficient of Resistance to Penicillin				
		1 or Less	2	3–5	8–10	32–64
0·1 mega unit a day for 28 days	Died ..	1	2			
	Relapsed	6	1			
	Cured ..	6			1	
0·25 mega unit a day for 20 days	Died ..	1		2		
	Relapsed	4				
	Cured ..	7	1	1		
0·25 mega unit a day for 28 days	Died ..	6	2	2		
	Relapsed	3	1	1		
	Cured ..	14	3	2	1	
0·5 mega unit a day for 20 days	Died ..				1	
	Relapsed		1	1		
	Cured ..	4	2	1		1
0·5 mega unit a day for 28 days	Died ..	3	1			2
	Relapsed					
	Cured ..	8	3	2	1	
Total	Died ..	11	5	4	1	2
	Relapsed	13	3	2		
	Cured ..	39	9	6	3	1

lack of correlation between this coefficient and the results of treatment. There were 16 patients infected with comparatively insensitive streptococci having a coefficient of resistance between 3 and 10; 5 of these have died, 9 have been apparently cured, and only 2 have relapsed. These results compare favourably with those in patients infected with more sensitive organisms. There were three patients infected with streptococci more than 32 times as resistant as the Oxford staphylococcus, and this degree of insensitivity may be of therapeutic significance One of these three was cured after receiving 0.5 mega unit a day for 21 days, but in the other two septicaemia remained uncontrolled while they were receiving 0.5 mega unit a day, and both ultimately died. A fourth patient was infected with an extremely resistant strain of *H. influenzae,* and he relapsed 6 days after receiving 0.5 mega unit a day for 23 days.

These results suggest that the resistance of the organism to penicillin as measured by ordinary titration methods is of no clinical significance within a wide range. Only when the organism was more than 10 times as resistant as the Oxford staphylococcus did this measurement appear to be of therapeutic and prognostic importance. This unexpected result may only reflect some inherent inaccuracy in the methods employed in measuring sensitivity, but this does not affect its clinical importance, since these methods are in general use.

Comments

Of the 147 patients treated in this series, 50 have died and 81 have been apparently cured, but it should not be forgotten that the systems of dosage at first used were inadequate. Of the remaining 16 patients, some are still under treatment and in a few treatment has been discontinued for one reason or another.

This report is concerned only with evidence which has a bearing on the treatment of subacute bacterial endocarditis. It

is expected that a more complete analysis of these and other patients treated within the scope of this investigation will be made at a later date.

Summary

The results here reported provide further evidence of the therapeutic value of penicillin in subacute bacterial endocarditis.

If the administration of penicillin is continued for 10 days or more almost any system of dosage will occasionally produce excellent results. Relapse is, however, more likely to occur if treatment is not both prolonged and intensive.

From the evidence available it is safer to assume that inadequate treatment is prejudicial to later success.

In previously untreated patients 0.5 mega unit a day for 28 days has given better results than any other system of dosage employed.

The resistance of the infecting organisms as measured by ordinary titration methods appeared to be of no clinical importance within a wide range. Only when the organism was more than 10 times as resistant as the standard test staphylococcus did this measurement appear to be of therapeutic and prognostic significance.

This report is submitted on behalf of a large number of workers who have taken part in this investigation in the fourteen research centres appointed by the Penicillin Clinical Trials Committee.

TREATMENT OF SUBACUTE BACTERIAL ENDOCARDITIS BY PENICILLIN

PRELIMINARY REPORT ON 18 CASES

BY

GEORGE E. S. WARD, M.D., F.R.C.P.
Senior Physician, Middlesex Hospital

R. I. MEANOCK, M.B., B.S.
Registrar, Middlesex Hospital

F. R. SELBIE, M.D., Ph.D.
Assistant Pathologist, Bland-Sutton Institute of Pathology

AND

R. D. SIMON, B.Sc.
Research Assistant, Bland-Sutton Institute of Pathology

In February, 1945, we were invited by the Medical Research Council to form one of the centres for investigating the value of penicillin for the treatment of subacute bacterial endocarditis. Since February we have treated 18 cases. All our patients have had penicillin with no heparin, and each case has been given 480,000 units daily by intramuscular injections—60,000 units every three hours, night and day. In the first four months this dosage was continued for 21 days—total, 10 million units—and in every case the blood was rendered sterile almost at once, and the temperature usually settled down within a few days of starting treatment. Two cases relapsed, necessitating a further course of penicillin, so it was decided at the beginning of June to give a course of 28 days instead of 21—total, 13.5 million units—as suggested at a meeting of the Endocarditis Research Committee. Since this plan was adopted we have had no more relapses.

In all our cases streptococci of the *viridans* type had been obtained from the blood, and treatment began only after bacteriaemia had been confirmed by positive blood cultures. The only therapeutic measures adopted besides the penicillin were iron or liver preparations for the anaemia and in two cases blood transfusion, vitamin C, and, in one instance, sodium salicylate, antiphlogistine for the relief of localized pain, and mersalyl and digitalis for such cases as showed evidence of congestive failure.

Of these 18 patients four have died, but of these four only one can be considered a failure to respond to penicillin. No. 256 died from cerebral embolism two days after penicillin injections were begun; No. 342 died as a result of a rupture of one of the cusps of the aortic valve; No. 363 died from haemorrhage from enlarged vessels in the oesophagus, which were caused by cirrhosis hepatis; No. 361 failed to show any response to penicillin, and died from pulmonary infarction.

Of the remaining 14 cases two have manifested signs of congestive heart failure. One of these was one of the two cases which relapsed after the 21-days course of penicillin; it has responded well to rest and mersalyl, and now shows no signs of congestive failure. The other case shows early signs of congestive failure, but has refused to come into hospital for further treatment. This patient is still free from infection of the blood. During the course of treatment with penicillin in this case the haemoglobin level fell to 18% as a result of haematemesis.

Thirteen patients have remained free from infection, and have left hospital and are apparently well. One is still in hospital. He has completed his course of penicillin, and shows negative blood cultures but has not yet got a sufficiently stable cardiac mechanism to warrant a claim of uninterrupted convalescence.

No. of Days Treated	No. of Cases	No. Died	No. Relapsed and Re-treated for a further 28 Days	Days Free from Recurrence					
				50–100	100–150	150–200	200–250	250–300	Over 300
21	9	1*	2	—	—	—	—	4	2
28	11†	3	—	3	1	3	1	—	—

* This was No. 256, who died on the second day of the course.
† Including the two which failed on the 21-days course.

Case Summaries

Case 246.—Female aged 12. Admitted 23/1/45. After tooth extraction, two weeks previously, had felt unwell: anorexia, fever, sweats, temperature 103°, pulse 120, apical systolic murmur; haemoglobin (Hb) 88%, basal sedimentation rate (B.S.R.) 20 mm./hr. Treated as rheumatic carditis up to 16/2/45, when temperature started swinging again with profuse sweats; two blood cultures positive. 23/2/45: Began course of penicillin. Temperature normal, only slight sweats; blood culture negative. 1/3/45: Osler's nodes on fingers, scanty red cells in urine. 11/3/45: Central abdominal pain, temperature 102°, pulse 140; subsided in 3 days; probably small mesenteric embolus. 16/3/45: Penicillin discontinued. 5/4/45: Started to get up. 30/5/45: Hb 112%; B.S.R. 5 mm./hr.: a few red cells in urine. 1/6/45: Discharged to convalescent home. Has been seen on several occasions since then. Remained fit; now back at school.

Case 249.—Male aged 29. Admitted 23/2/45. Known congenital heart since age of 2; rheumatic fever at age of 13. Seven months' history of malaise, lassitude, pain in the chest, sweating, swollen ankles; in the same period lost 3 st. (19 kg.) in weight. Clubbing of fingers; spleen palpable; to-and-fro murmurs, maximal in third and fourth interspaces 1/2 in. (1.3 cm.) from sternum; basal crepitations; blood culture positive on two occasions; moderate red cells in urine; Hb 70%; B.S.R. 40 mm./hr. 25/2/45: Started penicillin. 28/2/45: Pain in right side of chest; small pulmonary infarct. Blood culture negative. 2/3/45: Temperature normal. 8/3/45: Marked improvement; appetite good, still occasional night sweats. 18/3/45: Penicillin discontinued. 19/3/45: Positive blood culture. One tooth removed under general anaesthesia; covered by 48 hours' penicillin, 60,000 units three-hourly. Culture of roots revealed *Str. viridans*. Remaining teeth removed in four sessions, covered by penicillin. 13/6/45: Discharged. Has been seen on many occasions since, the last on 2/11/45. Now back at work as a salesman; 2 st. (12.7 kg.) increase in weight; heart unchanged; slight dyspnoea on effort; Hb 106%; B.S.R. 5 mm./hr.

Case 273.—Female aged 26. Admitted 16/3/45. Gave a history of rheumatic fever at age of 7. She had suffered from mild cerebral embolism six weeks before admission and had a swinging temperature, with red cells in urine, aphasia, and oedema of ankles. Café-au-lait colour, extremely pale. Aortic and mitral lesions; nominal aphasia. Hb 36%; B.S.R. 32 mm./hr.; positive blood culture. 21/3/45: Started course of penicillin. 26/3/45: No response to iron or liver preparations; 3 pints (1.7 litres) blood transfusion. Occult blood strongly positive. 5/4/45: Haematemesis—30 oz. (0.85 litre), necessitating further transfusion. Hb only 18%. 7/4/45: Small haematemesis. Patient collapsed; pulse irregular; 3 pints concentrated red cells given. Still profuse red cells in urine. 12/4/45: Occult blood still positive. 13/4/45: Discontinued penicillin. 17/4/45: Hb 46%; macroscopic haematuria. Heart unchanged; spleen palpable; rales at both bases; profuse red cells in urine. 25/4/45: Frank haematuria; blood cultures remained negative; Hb 52%; B.S.R. 30 mm./hr. 22/6/45: Discharged to convalescent home. Has been seen as an out-patient from time to time; remained well until recently, when some oedema of the ankles developed, for which she has refused treatment. Hb 82%; B.S.R. 8 mm./hr.

Case 289.—Female aged 21. Admitted 14/4/45. Two months' history of oedema of ankles and lassitude. Rheumatic fever at age of 8. Night sweats; pain in left lower chest. Very pale; rapid pulse; mitral stenosis; spleen palpable; red cells in urine; Hb 63%; B.S.R. 30 mm./hr.; blood cultures positive. 16/4/45: Started penicillin. 18/4/45: Temperature normal. 9/5/45: Discontinued

penicillin. 11/6/45: Getting up. Hb 94%; scanty red cells in urine; remaining afebrile; blood cultures negative. 18/6/45: Evening temperature 99–100° for several days; blood culture positive on two occasions; tip of spleen palpable. 26/6/45: Further course of penicillin started. 17/7/45: Penicillin discontinued—total 23 million units. 30/7/45: Remained afebrile, with negative blood cultures. 14/8/45: Discharged to convalescent home; Hb 98%; B.S.R. 15 mm./hr. 8/10/45: Readmitted to hospital for treatment of congestive failure. 14/11/45: Good response to treatment. 2/12/45: Discharged. No evidence of heart failure.

Case 293.—Female aged 46. Admitted 14/7/45. Goitre removed at age of 20. Pain in back and legs; occasional sweats. Mitral systolic murmur; petechial spots on hands; café-au-lait colour. Hb 62%; B.S.R. 22 mm./hr.; red cells in urine; positive blood cultures. 19/4/45: Started penicillin. 23/4/45: Temperature normal; appetite improved. 9/5/45: Discontinued penicillin. Still red cells in urine; Osler's node on right hand. 6/7/45: Discharged to convalescent home. 2/11/45: Seen as out-patient; Hb 104%; B.S.R. 3 mm./hr. Doing her own housework with no ill effects.

Case 295.—Male aged 30. Admitted 20/4/45. Rheumatic fever at age of 9. Four weeks' history of pain in left ankle; 10 days acutely ill—fever, rigors, low delirium, confused, irrational, with slow slurred speech. Apical systolic murmur; Hb 90%; B.S.R. 25 mm./hr.; red cells in urine; positive blood culture. 21/4/45: Cerebral embolus resulting in right hemiplegia and aphasia. 22/4/45: Started penicillin. 27/4/45: Some improvement in facial palsy. 13/5/45: Discontinued penicillin. 25/5/45: Speech improved; some movement possible in limbs; blood cultures negative. 4/6/45: Evening temperature raised; two positive blood cultures. 6/6/45: Evening temperature of 101°; further positive blood culture; second course of penicillin. 11/6/45: Four doubtful teeth removed under general anaesthesia. 14/6/45: Still raised evening temperature. 4/7/45: Discontinued penicillin—total, 23 million units. Blood cultures negative; massage and exercises to paralysed limbs. 24/7/45: Getting up in a chair. 27/8/45: Discharged to convalescent home. Blood cultures negative; afebrile; Hb 93%; B.S.R. 16 mm./hr.; walking with a stick. 2/12/45: Seen as an out-patient; gained 2 st. (12.7 kg.) in weight; heart unchanged; no evidence of failure; Hb 108%; B.S.R. 3 mm./hr.

Case 300.—Female aged 40. Admitted 26/4/45. Rheumatic fever at age of 20. Three months' history of loss of appetite, loss of weight, palpitations, tender spots on fingers. Petechial spots and splinter haemorrhages; aortic and mitral lesions; spleen palpable; red cells in urine; Hb 73%; B.S.R. 35 mm./hr.; several positive blood cultures. 28/4/45: Started penicillin. 11/5/45: Slight evening pyrexia; blood culture negative; splinter haemorrhage; red cells in urine. 19/5/45: Discontinued penicillin. 28/5/45: Pain in right shoulder and right arm. 11/6/45: Raised tender red swelling in palm of left hand; blood culture negative; red cells in the urine. 11/7/45: Dental extraction, covered by three days' penicillin. 23/7/45: Discharged to convalescent home. Seen as out-patient on several occasions—last time 2/11/45. Doing housework, weekly washing, etc. Gain in weight. Heart unchanged: no failure. Hb 104%; B.S.R. 4 mm./hr.

Case 302.—Female aged 27. Admitted 26/4/45. Rheumatic history at age of 10 and 23. Pain in left upper chest, lassitude, sweating, loss of weight; café-au-lait colour; splinter haemorrhage; temperature 102°; aortic regurgitation; Hb 54%; B.S.R. 42 mm./hr.; red cells in urine; positive blood culture. Raised tender swelling in palm of right hand. 1/5/45: Started penicillin. 7/5/45: Two further splinter haemorrhages; afebrile; blood culture negative. 14/5/45: Occasional evening pyrexia; Osler's nodes on fingers; red cells in urine. 22/5/45: Discontinued penicillin. 4/6/45: Remained afebrile; blood cultures negative; red cells in urine. 11/6/45: Osler's nodes. 21/6/45: Splenic infarct. 22/6/45: Painful swelling on dorsum of foot; red cells in urine; blood culture negative. 23/7/45: Discharged to convalescent home. Has been seen from time to time. 30/10/45: Heart unchanged; no failure; Hb 90%; B.S.R. 3 mm./hr. Found to be pregnant since discharge; termination advised and carried out.

Case 340.—Female aged 29. Admitted 25/6/45. Rheumatic fever at age of 13. Pain in chest, loss of appetite, breathlessness, palpitations, rigors; drowsy; café-au-lait tinge; petechial spots over the right forearm and splinter haemorrhages beneath the nails. Aortic and mitral lesions; spleen palpable; red cells in urine; Hb 73%; B.S.R. 31 mm./hr.; blood culture positive. 27/6/45: Started penicillin. 28/6/45: Dramatic improvement. 5/7/45: Spleen not palpable; blood cultures negative. 25/7/45: Discontinued penicillin. 7/8/45: Blood culture negative; no embolism; few red cells in urine. 30/8/45: Discharged home; no red cells in urine; Hb 98%; B.S.R. 23 mm./hr. Seen as an out-patient 2/11/45; doing light housework; no evidence of heart failure; heart unchanged; Hb 104%; B.S.R. 3 mm./hr.

Case 341.—Female aged 42. Admitted 10/7/45. Pain in left loin, general aches and pains, rigors, profuse sweats, oedema of ankles. Five teeth removed 6 weeks before admission. Sallow complexion; splinter haemorrhages; petechial spots on both forearms; apical systolic murmur; spleen palpable; red cells in urine; Hb 70%; B.S.R. 33 mm./hr.; blood culture positive. Started penicillin. 12/7/45: General condition improved, no further rigors. 14/7/45: Further crop of petechial haemorrhages; spleen not palpable; profuse red cells in urine. 22/7/45: Severe pain over frontal and maxillary sinuses; relieved 3 days later when several large clots were discharged. 7/8/45: Penicillin discontinued; blood culture negative. 31/8/45: Dental extraction under penicillin cover, several of the teeth growing *Str. viridans*. 2/10/45: Discharged to convalescent home. Has been seen on several occasions since. Leading a comparatively normal life. Hb 97%; occasional red cells in urine: heart unchanged; no evidence of failure; B.S.R. 5 mm./hr.

Case 360.—Male aged 36. Admitted 27/8/45. Lassitude for 3 weeks; persistent pyrexia. No rheumatic history. 19 teeth removed 7 weeks previously. Swelling of ankles; night sweats. Systolic murmur inside apex; screening confirmed maladie de Roger; spleen palpable; Hb 78%; B.S.R. 17 mm./hr.; scanty red cells in urine; positive blood culture. 30/8/45: Started penicillin; rapid response. 26/9/45: Discontinued penicillin. 28/9/45: Heart unchanged; spleen not palpable; blood culture negative; Hb 84%; B.S.R. 7 mm./hr.; few red cells in the urine. 3/11/45: Discharged to convalescent home. 7/12/45: Seen as an out-patient. Gain in weight; no failure; heart unchanged.

Case 364.—Female aged 22. Admitted 10/10/45. No rheumatic history; one month of malaise and fleeting joint pains. Enlarged spleen; mitral stenosis; swelling of ankles; a few petechial spots; positive blood cultures; a few red cells in urine; temperature 101°; Hb 83%; B.S.R. 26 mm./hr. 13/10/45: Started penicillin; general condition much improved. 20/10/45: Osler's node palpable in index finger; splinter haemorrhages under nails of right hand. 10/11/45: Discontinued penicillin. No further evidence of embolism; spleen not palpable. 23/11/45: Blood culture negative; still red cells in the urine; no change in the heart; no failure. 27/11/45: Getting up. 14/12/45: Dental extraction under cover of penicillin. 20/12/45: Discharged. Hb 99%; B.S.R. 14 mm./hr.; no red cells in the urine.

Case 365.—Male aged 29. Admitted 10/10/45. Pain in left groin, swelling of ankles, rheumatic pains in joints. No definite rheumatic history. Febrile; a few petechial spots; mitral stenosis; Hb 76%; B.S.R. 33 mm./hr.; blood cultures positive; red cells in urine. 12/10/45: Started penicillin. 18/10/45: Has remained afebrile since start of penicillin; appetite improved; blood culture negative. 26/10/45: Faint diastolic murmur at aortic area; blood culture negative. 9/11/45: Discontinued penicillin. 22/11/45: Getting up with no ill effects; no failure; heart unchanged. Massage and exercises before discharge. 14/12/45: Dental extraction under penicillin cover. Blood culture negative; Hb 90%; B.S.R. 14 mm./hr. 20/12/45: Discharged.

Case 366.—Male aged 51. Admitted 5/10/45. Had been unwell since influenza in August; fever, lassitude, anorexia. No rheumatic history. Sallow complexion; splinter haemorrhages; aortic and mitral lesions; positive blood cultures; Hb 73%; B.S.R. 22 mm./hr.; red cells in urine. 8/10/45: Started penicillin. 15/10/45: Temperature normal; "has not felt as well for five years"; blood culture negative. 27/10/45: Dull ache in centre of sternum on inspiration, spreads to left breast—pulmonary infarct. Later very restless, sweating, dyspnoeic; marked engorgement in neck veins; apex beat further out to left; systolic apical murmur had assumed a harsher quality; oedema of lung bases; liver tender; rapid auricular fibrillation; immediate intravenous digitalization. 28/10/45: Pulse regular at 130/min., definite improvement in general condition; failure subsided. 29/10/45: Pulse normal, though rapid rhythm. 5/11/45: Penicillin discontinued. 13/11/45: Pulse regular, 90/min.; heart smaller; no evidence of failure. 27/11/45: Afebrile; blood cultures remained negative. Hb 75%; B.S.R. 20 mm./hr. 31/12/45: Massage and exercises before discharge.

Case 256.—Female aged 56. Admitted 1/3/45, after having had 2 million units of penicillin in two courses, which did not appear to influence the endocarditis. Six months' history of oedema, dyspnoea, lassitude. Aortic and mitral lesions; pain in left ankle; positive blood culture; red cells in urine; Hb 63%. 3/3/45: Started penicillin. 5/3/45: Fatal cerebral embolism. *Necropsy:* Vegetations in left auricle, mitral and aortic valves; infarcts of kidney and spleen.

Case 342.—Male aged 34. Admitted 16/7/45. Pain in left chest; spots on legs; lassitude, increasing dyspnoea; night sweats; oedema of ankles. Clubbing; pale; spleen palpable; petechial rash on legs; Hb 48%; B.S.R. 30 mm./hr.; red cells in urine; positive blood culture; left pleural effusion. 26/7/45: Started penicillin. 1/8/45: Extreme cardiac asthma with further enlargement of the heart; marked aortic regurgitation; rales in both lungs; increasing pulmonary congestion. 13/8/45: Oedema of lungs less; heart still grossly enlarged; frequent extrasystoles; blood culture negative; red cells in urine; spleen not palpable; Hb 60%; B.S.R. 30 mm./hr. 23/8/45: Discontinued penicillin. 29/8/45: Increasing severity and duration of cardiac asthma. 2/9/45: Further increase in oedema

of lungs in spite of all diuretic measures. 6/9/45: Patient became orthopnoeic and died suddenly. *Necropsy*: Large ulceration through the aortic cusps.

Case 361.—Female aged 21. Admitted 11/8/45. No rheumatic history. Oedema of ankles; lassitude; upper abdominal pain; fever; increasing dyspnoea; petechiae on abdominal walls. Yellowish skin; aortic and mitral lesions; spleen not palpable; red cells in urine; positive blood culture; Hb 66%; B.S.R. 20 mm./hr. 16/8/45: Started penicillin. 20/8/45: Penicillin does not appear to have affected the temperature at all. Central abdominal pain; tenderness over McBurney's point. Course of sulphacetamide for urinary infection, which cleared up. 8/9/45: Boost doses of penicillin 100,000 units did not influence the high temperature. 12/9/45: Discontinued penicillin. 17/9/45: Remaining febrile; red cells in urine. 27/9/45: Finished course of sulphamezathine for bronchopneumonia. Still some consolidation in the left base; blood cultures positive. 1/10/45: Aspirin 10 gr. (0.65 g.) four-hourly—no effect on temperature. 6/10/45: Pain in left chest and area of consolidation. Died next day. *Necropsy:* Large friable vegetations on mitral and aortic cusps; recent infarct left lower lobe.

Case 363.—Male aged 29. Admitted 3/10/45. Two months' history of loss of appetite, increasing dyspnoea, occasional palpitations, tenderness of fingers. Admitted to military hospital 5 weeks ago after three-pint (1.7-litres) haematemesis. Very pale; splinter haemorrhages; Osler's nodes; spleen palpable; red cells in urine; positive blood cultures; mitral stenosis; Hb 65%; B.S.R. 21 mm./hr.; occult blood positive. 4/10/45: Started penicillin. 7/10/45: Temperature normal; general condition much improved. 8/10/45: Febrile; blood culture negative. 9/10/45: Rigor. 15/10/45: Spleen further enlarged; another crop of tender spots on pulps of fingers. 18/10/45: Haematemesis 30 oz. (0.85 litre) bright red blood; replaced by 2 pints (1.14 litres) packed red cells by drip transfusion. 20/10/45: No signs of failure; abdomen less distended; spleen still palpable, not tender. 24/10/45: Haematemesis of 30 oz. bright red blood. Pulse 110/min.; not sweating or shocked. This was followed by further haematemeses of 20 oz. (568 ml.) bright red blood, later 15 oz. (426 ml.) and 10 oz. (284 ml.). Became shocked, pale, sweating; pulse 160/min., hardly perceptible. Immediate intravenous drip, packed red cells; improved until pulse came down to 90/min. Two hours later further haematemeses of 32 oz. (0.9 litre). In the next 24 hours vomited another 30 oz. of darker blood. Drip discontinued after 10 pints (5.7 litres). 26/10/45: Marked improvement; no evidence of failure; Hb 75%. 28/10/45: Again became shocked; pain and massive distension in upper abdomen; further drip. 29/10/45: Patient died, not having recovered from final haemorrhage. *Necropsy:* Early coarse cirrhosis of the liver; large patent varicose veins in the oesophagus; 2½ pints (1.4 litres) of free blood in the stomach, with a clot representing about 3 pints (1.7 litres) more. Small vegetations on mitral valve, not much larger than rheumatic vegetations.

Bacteriology

Blood Cultures.—As has already been mentioned, streptococci of the *viridans* type were isolated from all cases before treatment was started. Qualitative and quantitative methods were used—that is to say, at least 5 ml. of citrated blood was inoculated into 50 ml. of meat extract peptone broth, and a further 2 ml. was used to make two poured-plate cultures. The latter method proved more useful in that, besides providing an estimate of the numbers of bacteria in the blood stream, it gave positive results on several occasions when the fluid culture showed no growth. In each of the cases described here a positive result was obtained with the first blood culture taken after admission, though on one occasion (Case 273) only the fluid culture gave growth. In two subsequent cultures from this case only one colony per ml. was found, so that the failure of the first plate cultures was presumably due to the small number of organisms in the blood. This case illustrates the small variation in the degree of bacteriaemia which we found to be the rule in the six cases in which repeated blood cultures were taken before treatment. There were, however, considerable variations in the number of colonies per ml. from patient to patient. Of 30 plate cultures taken before treatment two were negative, eight had 1 to 6 colonies, five 10 to 20 colonies, nine 28 to 60 colonies, five 100 to 250 colonies, and one (Case 256) had 2,000 colonies per ml. A high bacteriaemia seemed to have some prognostic significance in that the patients who subsequently died had colony counts of 50, 60, 100, and 2,000 per ml.

Starting from the second to the sixth day, three to six blood cultures were taken during the course of treatment, and all were negative except in three cases, two of which were the only cases that subsequently relapsed. It would thus appear that a positive blood culture during the course of penicillin treatment may be an indication that relapse is likely to occur. In Case 249 a positive blood culture was obtained on the day after stopping penicillin treatment, but this was regarded as due to a transient invasion probably from infected teeth, because there were no clinical symptoms of active infection, and since then blood cultures have been consistently negative.

Characters of the Isolated Streptococci.—The streptococcal strains isolated from these cases before treatment all displayed alpha-haemolysis typical of the *Str. viridans* group, with the exception of one strain (Case 342) in which haemolysis was slight and more of the beta type. Of these strains 14, excluding that from Case 342, have been maintained for further study, and preliminary work shows that they can be divided into two main fermentation groups. The first group, comprising six strains, ferment lactose, and in their range of fermentation reactions correspond well with *Str. salivarius*, described by Andrewes and Horder (1906) as the most common type of *Str. viridans* in the mouth and nasopharynx, and of frequent occurrence in subacute bacterial endocarditis. The second group, comprising eight strains, do not ferment lactose and are less readily identified with known strains. Okell and Elliott (1935), however, have found streptococci of the *viridans* type that do not ferment lactose in 11 of 36 strains isolated from cases of subacute bacterial endocarditis and in 11 of 26 isolations in blood cultures from cases of dental sepsis. It would therefore appear likely that our strains of the second group can also be mainly associated with *viridans* strains commonly found in the region of the mouth.

Penicillin Sensitivity.—The streptococci from these cases were tested for penicillin sensitivity by the method described by Selbie, Simon, and McIntosh (1945). In general, and like other strains of *Str. viridans* that we have tested, they were rather more resistant to penicillin than most strains of *Str. pyogenes*. Twelve strains were in the range of being not less than half and not more than twice as sensitive as the Oxford staphylococcus, while four strains were 4 times less sensitive and the strains from Cases 363 and 273 were 4 and 8 times more sensitive than the Oxford staphylococcus. There was no apparent correlation between penicillin sensitivity and the fermentation reactions of the organisms or the results of treatment. In the two cases which relapsed there was no difference in sensitivity between the organisms isolated before and after treatment.

Penicillin Blood Levels.—The dosage of penicillin during treatment was controlled by the estimation of penicillin in the blood serum by the method previously described (Selbie, Simon, and McIntosh, 1945). In general, after the intramuscular injection of 60,000 units of penicillin the blood serum inhibited the growth of the Oxford staphylococcus in a dilution of 1/32 to 1/128 at one-quarter to half an hour, and 1/1 to 1/8 at 3 hours. In Case 363, however, penicillin levels were rather low, and in Case 273 the bacteriostatic dilutions remained high, and were 1/32 and 1/64 even at the end of the three-hour period.

Discussion

All cases in this series were clinically shown to have the usual criteria of bacterial endocarditis: fever, heart lesion, and embolic phenomena in at least two different systems. In view of the fact that a transient bacteriaemia can occur in patients with heart lesions who have no bacterial endocarditis, the above signs were demonstrated in addition to positive blood cultures (*Str. viridans*) before a case was treated. In spite of a severe and protracted debilitating illness coupled with the discomfort of up to a month's three-hourly intramuscular injections, all the patients remained extremely cheerful and of bright mentality: the "spes endocarditica" of Horder (1920).

The commonest superficial evidence of embolism was found in the form of splinter haemorrhages beneath the nails, occurring in 15 cases, in contrast to Osler's nodes, which were found in 9 patients. These embolic phenomena occurred most frequently in the first week of treatment, but also in several cases up to one month after treatment. In three cases lesions were noted in the palms of the hands; presumably embolic in nature, they presented suddenly as a tender raised nodule the size of a pea, and made all movements of the fingers painful. In two days the pain was less noticeable, but the fingers of

the affected hand showed some degree of flexion deformity, with complete inability to extend them actively. This was soon overcome with massage and passive movements, as probably due to involvement of palmar fascia.

Palpable splenic enlargement was present at some stage of the illness in 13 cases. In 7 patients the spleen rapidly diminished in size, not being palpable after 10 days' treatment. The degree of enlargement and the time it remained palpable were approximately proportional to the duration of the disease. Although 3 of our patients have shown transient visual disturbances such as blurring of vision, none have had white spots in the retina—so-called Roth spots. There was no optic neuritis or papilloedema. Clubbing of the fingers was present in 15 patients, in three of whom it appeared to be less marked after their discharge from hospital than on admission.

On admission all patients had an anaemia of microcytic hypochromic type which varied between 36% and 82% haemoglobin, mostly between 55% and 70%. In only 6 patients was the leucocyte count above 10,000 cells per c.mm., and one case showed the frequently described increase in large mononuclears, here 1,500 in a total white count of 8,800. An increase in the haemoglobin percentage occurred along with other signs of improvement—e.g., increase in weight, diminished evidence of embolism, fall in sedimentation rate. The B.S.R., estimated by Wintrobe's method corrected for packed-cell volume, was invariably raised at the outset, and showed a slow but steady fall, remaining abnormally high during the stay in hospital, and returning to within normal limits only some three months after treatment.

Microscopical haematuria was found in all cases, macroscopic in two, one of which showed clinical signs of a renal infarct of some magnitude. Ten patients continued to have a small number of red blood cells in the urine—one case five months after the end of treatment. This persistence of blood cells does not appear to be associated with any impairment of renal function at the present state of follow-up. In Bell's (1932) series over 50% of kidneys in endocarditis showed embolic focal nephritis; a smaller percentage had a diffuse acute or chronic glomerulonephritis. Since there may be a considerable time-lag between the onset of these lesions and the time when signs of renal impairment manifest themselves it is probable that, in the future, cases cured of endocarditis will show impairment of renal function.

A typical café-au-lait colour was noted in only 5 patients, probably because the majority started treatment within the first few months of onset. Three patients suffered cerebral damage from embolism—two of these within the first three days of treatment, one before treatment was started. It is worthy of note that the two relapses occurred early—i.e., within six weeks of terminating treatment.

Dental extraction can almost certainly be cited as the determining factor in initiating the infection in 3 patients who first noticed symptoms immediately after this procedure. A further 9 patients showed signs of dental infection. That oral sepsis may be a determining factor in initiating subacute bacterial endocarditis has been amply demonstrated by Okell and Elliott (1935), who found a transient bacteriaemia after teeth extraction in 30 out of 40 cases with marked gum disease, and also obtained positive blood cultures in 12 of 100 cases of oral sepsis without the added trauma of extraction. There can therefore be no doubt that the most stringent oral hygiene is essential in persons with congenital or rheumatic heart affections. In our cases a rigorous search was made for septic foci, and these were eradicated in order to prevent reinfection.

In this series the disease has been completely arrested for periods of two to ten months, as judged by a gain in weight, normal temperature, disappearance of anaemia, absence of leucocytosis, diminution in the number of red cells in the urine, and fall in the sedimentation rate. Three of the four deaths resulted from causes not amenable to chemotherapy—i.e., ruptured aortic valve, cerebral embolism, and cirrhosis of liver.

Until penicillin was used in the treatment of subacute bacterial endocarditis this dread disease carried a mortality of close upon 100%. We now feel definitely more hopeful, or even confident that means of curing this condition are within measurable reach.

Summary

Eighteen cases of proved subacute bacterial endocarditis treated with penicillin are described. There is reasonable hope of permanent cure in 11 instances. There were four deaths, but only one can be called a failure to respond to penicillin. In three cases it is as yet too early to claim permanent recovery.

We should like to thank the Medical Research Council for providing penicillin for this investigation, and Mr. J. W. Schofield, the dental surgeon, for his advice and treatment of the teeth in the cases mentioned above; also Prof. J. McIntosh for his help and advice.

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SYMPATHECTOMY IN PERIPHERAL ARTERIOSCLEROSIS

BY

E. D. TELFORD, F.R.C.S.

Emeritus Professor of Surgery, University of Manchester

AND

H. T. SIMMONS, Ch.M., F.R.C.S.

Research Fellow, Manchester Royal Infirmary

(From the Neurovascular Clinic, Manchester Royal Infirmary)

The ischaemia to which the ill effects of arteriosclerosis are due is caused partly by the thickening and narrowing of the vessels and partly by thrombi deposited on the altered intima. The damage may be made worse, sometimes acutely so, by the impaction of emboli from above, and there is also evidence that spasm of the diseased vessels may play some part in aggravating the trouble.

If the mischief were evenly and progressively spread throughout the arterial tree the sequence of mishaps would be coldness, claudication, rubor, rest-pain, persistent deepening cyanosis, and eventually onychia, ulceration, or gangrene. Such a sequence is, in fact, seen in a number of cases, but the complexity of branches, the proneness to disease of certain areas, and the wide differences in the ease with which collateral circulation can be established lead to much divergence in both the order and the severity of symptoms. For instance, an obstruction in the more proximal stretches of the supply may cause only a moderate claudication going on for years without further trouble, whereas an obstruction in the popliteal area not only may cause severe claudication but may gravely imperil the life of the leg. Again, it is not uncommon to find severe digital thrombosis with a palpable posterior tibial pulse and no claudication. These latter cases may be due to the silting up of the vessels by repeated minute emboli and are apt to go to the bad rapidly with few or no premonitory signs. Such wide variations not only make prognosis difficult but render it far from easy to estimate the value of any given line of treatment.

In view of the poor results of medical treatment, with its expectant attitude, we have attempted over a number of years and on many different types of cases to find out what results might be obtained by the practice of sympathectomy on these patients. Division of vasoconstrictor fibres might be expected to lead to an improved supply partly by dilatation of the vessels and partly by improving collateral channels, provided always that the vessels were not too far damaged to permit of a response. Further, if it be true that spasm is a factor, any spastic contribution would be lessened or entirely eliminated.

For the purpose of this paper the word "sympathectomy" means either a cord-ganglionectomy of the lumbar chain, one and a half to two inches (4–5 cm.) in length, centred opposite the third lumbar vertebra, or, for the upper limb, a section of the thoracic chain below the third rib with wide dislodgment of the cut ends.

Scope of the Inquiry

The period over which the work extends is 15 years and the number of patients operated upon is 98. There were only seven women in the series. The consequences of arteriosclerosis are no doubt much less common in women than in men, but the

proportion of 91 males to 7 females is due to the fact that the man more often seeks advice than does the woman because of the interference with wage-earning. The average age of the patients who came on account of intermittent claudication was 50 years, while of those suffering from gangrene the average was 56. The complications of arteriosclerosis are to be found at ages much younger than is generally supposed. Our youngest patient was a man aged 32 who came to amputation owing to gangrene of the foot due to thrombosis of an ulcerated, calcified popliteal artery. The immediate post-operative mortality was small in view of the bad surgical risks of this type of patient. There were four deaths—one from alcoholic delirium, one from a profuse haematemesis due to a duodenal ulcer, and two from pulmonary embolism.

The follow-up has been very thorough; only three of the cases are untraced. Twelve of the patients are known to have died and, as might be expected, the cause of death in ten of these has been certified as either "angina" or "coronary thrombosis." No case of diabetes is included in the list.

Of the 91 cases left for analysis, 88 were in the lower extremity and 3 in the arm. The sympathectomy was bilateral in 46 cases and unilateral in 45, thus providing for review the not inconsiderable number of 137 limbs. The 88 cases in the lower limbs may be further subdivided into 47 in which the operation was done for intermittent claudication and 41 in which the reason for operation was incipient or frank gangrene.

Results in Intermittent Claudication

The post-operative history of these 47 cases is on the whole disappointing. They were all severe examples with claudication of the order of 25 to 50 yards (23–46 m.), and although not one has failed to show some improvement the majority have gained no more than 50 to 100 yards (45–90 m.). Nearly all say that the period of rest before they can go on again has been shortened and that the pain is not quite so acute. While this kind of result would hardly justify a major operation, it is gratifying to find that not one of these patients who have been followed for from 5 to 15 years has developed rest-pain or gangrene.

Though the average result has not been encouraging we find that six of these 47 cases were so far relieved as to become almost normal. One man returned to a heavy insurance round and walked many miles each day until he died suddenly from a coronary thrombosis. Another returned to his work and could walk any reasonable distance, but not uphill. This man was found at operation to have a complete obstruction of the aortic bifurcation. In the other successful cases the thrombosis was highly placed. These results are in agreement with an old observation that sympathectomy has given its best results in high obstructions. It may be possible by further study and experience to select with greater certainty the type of case that is likely to do well after operation.

Should operation be decided upon it should in all cases be bilateral, although complaint is usually made of one leg only; this is because the worse leg pulls the patient up before claudication can develop in its fellow. If these patients are tested by a claudicometer the second leg will usually be found to be little better than the one of which complaint is made.

Results in Cases with Gangrene

Since in arteriosclerosis there can be no question of a cure, the results in this group have been classified as "good" and "failed." By good is meant the abolition of rest-pain, the change from chronic invalidism to a life of reasonable activity, and the separation and healing of minor gangrenes. Judged on these lines the results in 21 cases were good, while in the remaining 20 the operation did not succeed and some form of amputation had to be done. We would point out, however, that in a sympathectomized limb it is often possible to perform a much less radical amputation than the customary one through the lower third of the thigh. A more detailed examination brings out the fact that without exception all the cases which gave good results were the earlier ones with rest-pain, persistent cyanosis, onychia, or minor gangrene of one or two toes.

A successful result depends upon the patency of a sufficient number of digital vessels. If the extent and degree of digital thrombosis are severe a good result is unlikely, and in doubtful cases preliminary spinal analgesia or a paravertebral sympathetic chain block should be done to estimate how far the circulation can be restored. The cutting out of the constant wearing rest-pain after operation is often dramatic, but is seen only in those cases in which the operation has caused a definite improvement in the circulation. All the 20 cases which failed to show any improvement were instances of frank gangrene of two or more toes, or of the heel or dorsum of the foot.

It seems clear from these results that there is one stage in the downward progress of these patients at which sympathectomy may be usefully done. The time for it is the stage of rest-pain with deep rubor blanching rapidly on elevation or with persistent cyanosis. No more than trivial and superficial black patches should be present, but onychia can usually be got to heal.

If gangrene is more than trivial in extent, and especially if it be complicated by infection, the operation should not be done. In fact, two of the patients in our series showed a distinct and disquieting extension of the trouble after sympathectomy.

The Upper Extremity

The patients treated by sympathectomy for the complications of arteriosclerosis in the upper limb are too few to warrant any conclusions. They were, one case of thrombosis of the brachial artery and two cases of severe and crippling Raynaud's syndrome such as is sometimes seen in the hands of older and, more often, women patients. All three gave very good results. This is what one would expect from the better blood supply and more free anastomosis of the upper limb; it has no area comparable to the popliteal for danger.

Summary and Conclusions

Sympathectomy is not likely to lead to any worth-while improvement in the majority of patients suffering from intermittent claudication. There are, however, occasional excellent results. These appear to be found in patients with more proximal thrombosis, and it may be that further observation and experience will make for greater confidence in the selection of cases for operation.

Sympathectomy has no place in the treatment of extensive gangrene, but has been found to be of much value in the earlier pregangrenous states—e.g., rest-pain, persistent cyanosis, and small local lesions.

PRIMARY LUNG CANCER IN CHILDHOOD

REPORT OF AN UNUSUAL CASE

BY

ARCHIBALD DICK, M.D., B.Sc.
Assistant Pathologist

AND

HUGH MILLER, F.R.C.S.Ed.
Honorary Surgeon

Royal Northern Infirmary, Inverness

The trend of opinion is that primary malignant disease of the lung is increasing; whether the increase is apparent or real is a question on which there has been no little controversy. The great majority of patients suffering from this disease are between the ages of 40 and 60. Thus Davidson (1930) recorded 107 cases of primary lung cancer with only two patients under 21 years, while Duguid (1927) described 173 cases with five under 21 years. Fried (1931) described 47 cases with only one patient between 20 and 29 years. References to primary lung cancer in childhood are still rare, and they are often unsatisfactory in that the origin of the primary growth is not always established. The diagnosis in childhood is often difficult; the following recorded cases each present some interesting but unusual feature. Wasch *et al.* (1940) described a case of bronchogenic carcinoma of seven years' duration in a boy aged 11. Sommer (1934) suggested the possibility of carcinomatous degeneration in a congenital cyst in a child 7 years old. Jones *et al.* (1943) described asthma as a presenting symptom in a boy of 10 years having a papillary growth extending into the lumen of the right main bronchus. Beardsley (1933) described an adenocarcinoma in a child of 23 months in whom secondary deposits had been evident 13 months previously. Hauser (1942)

recorded the case of a child of 17 months who had been ill for five months before the exact nature of the condition was realized.

The case to be described, in which the primary growth was not evident until eight months after a secondary deposit had become manifest, illustrates clearly the difficulties in the diagnosis of primary lung cancer in childhood, and would appear to be worth recording.

Case Record

The patient, a girl aged 9, was first seen at the out-patient department on March 9, 1944, complaining of pain in her left thigh of two weeks' duration, worse when walking and varying in amount each day. There had been no systemic upset or other sign of infection, but her doctor suggested the diagnosis of osteomyelitis and had started treatment with sulphadiazine. On examination there was tenderness over the upper end of the left femur, but no swelling of the thigh and no limitation of movement at the hip or knee-joint. *X*-ray examination showed no lesion of either femur; the leucocyte count was 10,650. There did not seem to be enough evidence to support the diagnosis of osteomyelitis, and she was allowed home, to be under observation.

On April 11 she was admitted to the Infirmary for further investigation; the pain in her left leg persisted, and was even troublesome when she lay in bed. Her general condition was satisfactory and she was afebrile; the leucocyte count was 8,250. A skiagram of the left leg now revealed a circumscribed area of atrophy just below the epiphysial line of the greater trochanter; nine days later this atrophy was more pronounced, but at the end of two weeks no further change had occurred. The condition was regarded as an inflammatory process affecting the upper end of the femur, and the possibility of a tuberculous focus was kept in view. No member of the family had suffered from tuberculosis. Her symptoms improved somewhat, and she was allowed home on May 16, with the instruction to rest in bed.

The patient was readmitted six weeks later (June 26) complaining of fairly severe and continued pain in the left leg. Her general condition had deteriorated somewhat and locally there was swelling of the left thigh. *X*-ray examination revealed further destruction of the upper end of the femur extending towards the shaft; there was no periosteal reaction and the cortex of the bone remained unchanged. The radiological appearances suggested an acute medullary infection, yet this was not consistent with the relatively slight clinical upset. Haematological and biochemical investigations on June 30 showed: Hb, 80%; R.B.C., 4.34 millions; C.I., 0.92; W.B.C., 5,510 (neutrophils 57%, eosinophils 5.5%, lymphocytes 30.5%, monocytes 7%). Further differential counts on July 14 and 19 revealed an almost identical distribution of the blood cells. The urine contained no Bence-Jones protein. Serum: albumin 5.8 g. %, globulin 2.2 g. %, and calcium 10 mg. per 100 ml.

A reasonable diagnosis appeared to be that of subacute osteomyelitis of the femur, and operation was considered advisable. At operation on July 5 several drill-holes were made into the bone and necrotic material was removed. Histological examination of this material revealed the presence of spicules and trabeculae of bony tissue separated by loose vascular connective tissue with masses of very cellular necrotic tissue, the cells of which could not be identified with certainty, but the lesion appeared to be neoplastic. There was no evidence of myeloma; and Ewing's tumour, another possibility, did not seem likely owing to the situation away from the mid-shaft and the absence of the typical radiological appearances of this tumour. A skiagram of the chest at this time (July 12) showed: "Enlarged partially calcified hilar and peribronchial glands, with peribronchial thickening in upper lung fields."

From July 14 to Aug. 25 the patient received deep *x*-ray therapy to the left femur; kilovoltage, 200; dose in *r* units, 2,000. By July 27 the disease process seemed arrested and showed commencing sclerosis with a periosteal reaction on *x*-ray examination. By Sept. 19 the process appeared to have "healed" and there was much sclerosis in the affected area; there was also slight atrophy of the head of the femur and a tendency to coxa vara. The child had no pain and was able to walk freely. We felt gratified at the response to *x*-ray therapy and the patient was dismissed on Sept. 23; the diagnosis was still uncertain and the prognosis doubtful.

On Nov. 10, eight months after she was first seen, the patient was readmitted complaining of cough, headache, and vomiting. She was emaciated and very breathless; there was found to be marked dullness of the right side of the chest, the clinical findings suggesting a right-sided pleural effusion. Aspiration of the chest revealed only a small quantity of blood-stained fluid which contained a few lymphocytes and some endothelial cells; there was no evidence of neoplastic cells. Further aspiration was attempted, but very little fluid was obtained, and the appearances were those of a needle entering solid lung or tumour tissue. The diagnosis was that of a malignant condition of the right lung, probably secondary to the obscure condition of the femur. *X*-ray therapy to the chest was carried out from Dec. 12 to 22, by which time the general condition did not permit of further treatment. The patient died on Jan. 4, 1945.

Necropsy Findings.—The body was that of a very thin emaciated girl. The mediastinum was enlarged and was displaced to the left. The right lung was almost entirely replaced by a large mass of necrotic malignant tissue arising from the upper main bronchus. The tumour had invaded the chest wall and the mediastinum. The left lung and the heart, apart from displacement, presented a fairly normal appearance. The abdominal viscera were all free from the neoplastic process. The upper end of the left femur was replaced by yellowish necrotic tissue, which on the lateral surface extended to the periosteum, and the cortex of this part of the bone was considerably thinned. Histological examination of the lung revealed the presence of a primary bronchial carcinoma of the anaplastic type which had involved the whole of the right lung. The lesion in the femur was of similar histological structure.

Discussion

This case of primary lung cancer in childhood, in which the correct diagnosis was not established until necropsy, presents several interesting features. Histological examination of the necrotic material from the bone first suggested the possibility of a neoplastic process; the local response to *x*-ray therapy was satisfactory, and substantiated this diagnosis. When the patient returned to hospital presenting pulmonary symptoms the first impression was that she had secondary deposits in her right lung causing a massive effusion. (It should be noted that a skiagram of the chest four months previously had revealed no evidence of a bronchial neoplasm.) The radiological appearances of the chest were now consistent with those of a massive pleural effusion, and it was not until a second aspiration was attempted that the nature of the lesion was recognized. Hauser (1942) had previously observed that a sufficiently large tumour causing displacement of the mediastinum may resemble an effusion. Having established the presence of a large lung tumour, it still seemed likely that the pulmonary lesion was secondary to that in the bone. As was stated by Florman (1943), metastatic tumours in the lung in childhood are less rare than primary tumours, since many neoplasms occurring in early life invade the blood stream and become seeded in the lungs. The primary lesion, which had remained unrecognized for eight months, was, however, found to be a bronchial carcinoma, and the lesion of the right femur was secondary. Allen and Smith (1932) have pointed out that metastatic tumours may give rise to symptoms before the original site is suspected of disease, but it is most unusual to find a primary bronchial carcinoma giving rise to a single secondary deposit in bone. We doubt if the correct diagnosis could have been established at an earlier stage; there was nothing to suggest a pulmonary lesion until one month before death. This case therefore stresses the likelihood of early metastases, but unfortunately offers no clue to the cause of the growth.

Summary

A case of primary lung cancer in a girl aged 9 is described. A single metastasis in the left femur caused symptoms eight months before the pulmonary lesion was recognized. The difficulties in the clinical and radiological diagnosis of the condition are discussed.

We wish to thank Dr. Gotlieb of the radiological department for his help with this case.

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Reviews of current literature bearing on various aspects of child welfare, by specialists in their own subjects, are a feature of the March issue of *The World's Children* (20, Gordon Square, London, W.C.; 6d.): Dr. H. Mannheim, of the London School of Economics, writes on juvenile delinquency and the law; Mr. F. Le Gros Clark on science and nutrition; and Dr. R. G. Gordon on problems of adolescence. Mr. John Morgan considers the National Insurance Bill from the point of view of its relation to children and family welfare; Dr. Harold A. Moody discusses the problem of illegitimate children of English mothers and American-negro troops; and Dr. R. P. Stewart, writing from Greece, deals with the question of nutrition in that country.

SURVIVAL OF CORTICAL BONE AFTER BONE-GRAFTING

BY

DAVID BROWN, M.Ch.Orth., F.R.C.S.Ed.

Orthopaedic Surgeon, the Royal Infirmary and Children's Hospital, Sunderland

Since the earliest days of bone-grafting there has been doubt whether any of the cells of the graft survive. Until recently this subject was thought to be largely of academic interest because cortical bone had been used as a graft almost exclusively, and it had often been noted that a cortical graft was just as successful in promoting union whether it was transplanted alive or had first been killed and sterilized by boiling.

A change has recently taken place in surgical opinion on this subject, notably as a result of the work of Mowlem (1941), who was able to secure histological specimens of iliac-bone grafts four or five months after their insertion for repair of the bridge of the nose. These sections seemed to show that transplanted cancellous bone transformed itself into cortical bone within the short space of four months after operation, and that the cells in this bone remained alive; while transplanted cortical bone remained cortical in structure, its lacunar cells appeared dead, and it had not yet been replaced by living bone five months after the operation.

It was concluded from these interesting observations that cortical bone was too dense to allow the passage of sufficient tissue fluid to nourish the lacunar cells. A tibial cortical graft might therefore be expected to die and be gradually replaced by creeping substitution from the adjacent bone, while its function in a bone-grafting operation was simply to act as a splint and as a source of readily available calcium. Cancellous bone, on the other hand, was regarded as of so spongy a structure that it could be permeated by tissue fluids and so survive after transplantation.

The truth of these observations has since been abundantly tested, and Higgs (1945) was able to quote comparative figures for bone grafts which indicated that osteogenesis was more rapid in those cases where a graft of cortical bone was combined with the use of cancellous chips than where cortical bone was used alone.

It seems of interest in this connexion to quote three cases of bone tumours which have been excised extraperiosteally and replaced by a tibial cortical bone graft. In each case the graft has apparently survived without showing any evidence of being replaced by creeping substitution, while in one case a fracture of the graft with subsequent union took place.

Illustrative Cases

Case 1.—Female aged 18: a case of rapidly growing enchondroma of the proximal phalanx of the right thumb which had recurred following incision and curettage. Operation (Feb. 1, 1940) consisted of extraperiosteal excision of the whole proximal phalanx of the thumb and replacement by a tibial cortical graft sharpened at each end and inserted between the rawed base of the distal phalanx and the head of the metacarpal bone of the thumb. Union of the graft had taken place at both ends by June 26, but a month later the union at the distal end broke down and a false interphalangeal joint began to form. When last seen on Dec. 8, 1943, the graft, which remained strongly united at its proximal end, was composed of strong bone throughout, and the false interphalangeal joint had acquired 30° of active flexion and extension. At present, nearly six years after the operation, the patient reports that her thumb remains as good as when she was last seen in 1943.

Case 2.—Female aged 24: a case of osteoclastoma of the lower end of the left radius which recurred after curettage. Symptoms were first noticed when the patient suffered a fracture through the tumour during an epileptic fit. Operation (Oct. 31, 1941) comprised incision over the postero-lateral surface of the hand and lower end of the forearm; separation of tendons and nerves from the front and back of the wrist-joint; division of the wrist-joint capsule so as to allow the hands to be capsized ulnawards, hinging on the ulnar collateral ligament; extraperiosteal removal of the whole lower end of the radius with the pronator quadratus muscle; and replacement by a large tibial cortical bone graft inserted into the split lower end of the radius and the denuded proximal surface of the carpus. During the operation the tendon of the extensor pollicis longus was ruptured; this was made good by transplanting the extensor carpi radialis longior into the distal end of the thumb extensor.

On April 23, 1942, the graft was regarded as united strongly enough to allow removal of the plaster, but, in view of the patient's epilepsy, she retained an aluminium splint on the arm for several months longer. On Dec. 28, 1942, she complained of pain in the wrist, and a skiagram showed a crack in the lower end of the graft. It was assumed that she had refractured the graft during a fit. The wrist was immobilized again in plaster. Union of the fracture subsequently took place, though the graft shortened during the process of the union and allowed radial deviation of the hand. At present, four years after the operation, the graft remains united at both ends and at the site of the fracture.

Case 3.—Female aged 36: a case of osteoclastoma of the lower end of the right radius. The operation (March 20, 1944) was essentially the same as in Case 2, except that the tendons of the extensor pollicis longus and abductor pollicis longus were deliberately divided and later resutured. Uneventful union of the graft took place by October, 1944. At present, 19 months after the operation, the skiagram shows sound union at both ends of the graft with good-quality bone intervening.

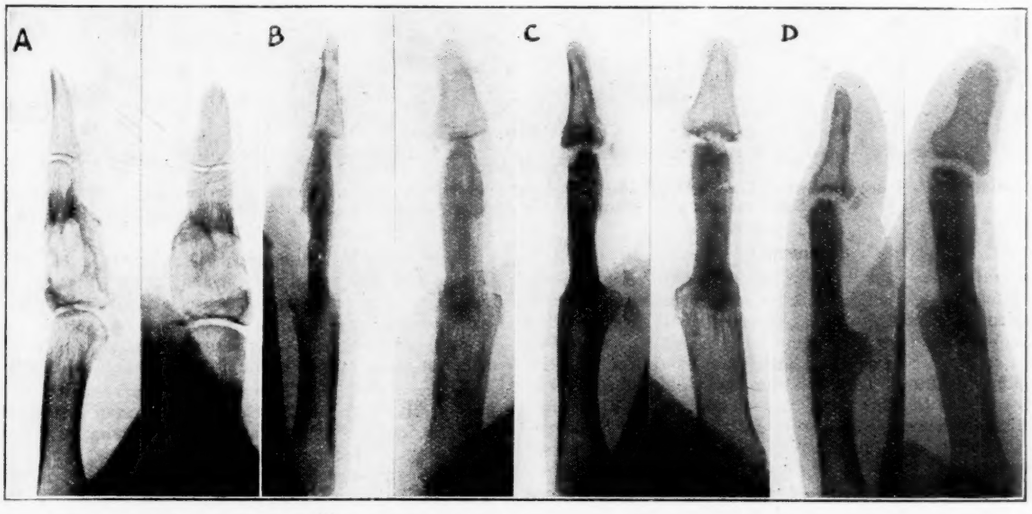

FIG. 1.—Case 1. A, Enchondroma of proximal phalanx of thumb. B, Five months after extraperiosteal excision and replacement by bone graft: union both ends of graft. C, Fifteen months after operation: false joint forming at distal end of graft. D, Three years and ten months after operation: actively movable false joint at distal end of graft.

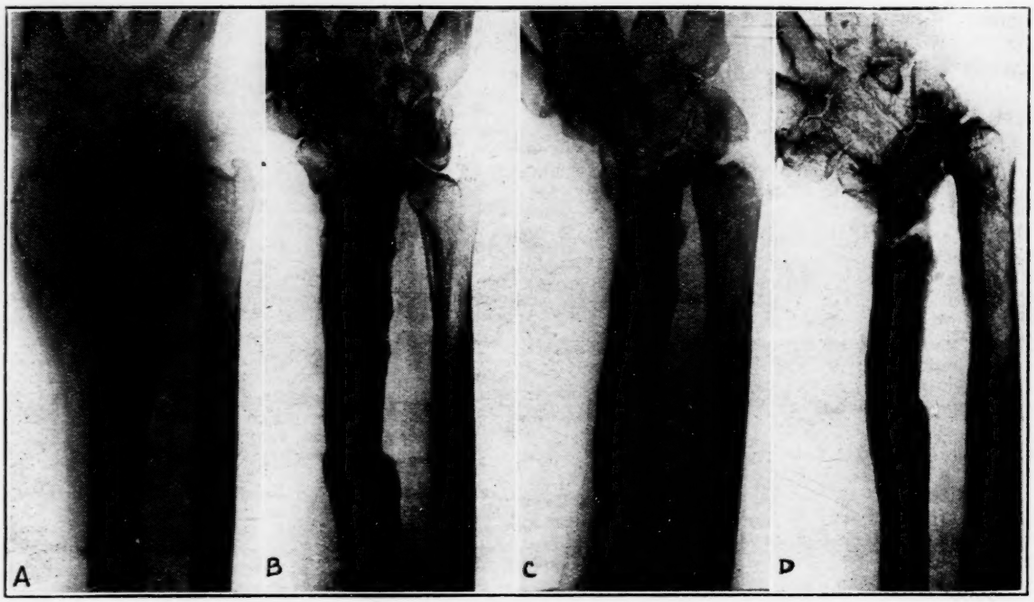

FIG. 2.—Case 2. A, Osteoclastoma of lower end of radius. B, Six months after extraperiosteal excision and replacement by bone graft. C, Fourteen months after operation: fracture of graft. D, Four years after operation: fracture remains united.

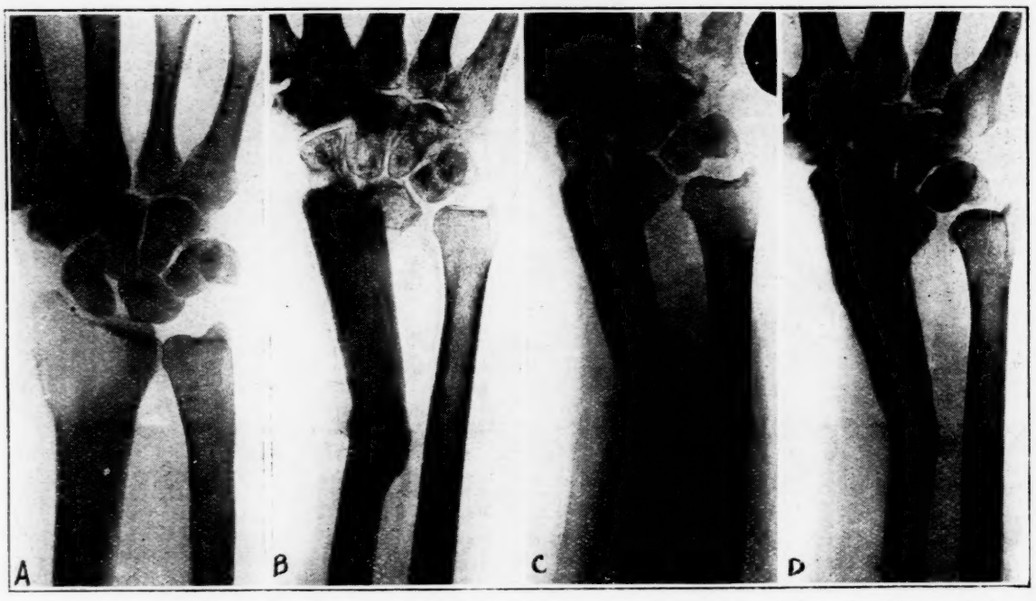

FIG. 3.—Case 3. A, Osteoclastoma of lower end of radius. B, Four months after extraperiosteal excision and replacement by bone graft. C, Seven months after operation. D, Nineteen months after operation.

Comment

These grafts have evidently not received any assistance from the periosteum in their survival, since in each the periosteum of the recipient bone was completely removed with the tumour and the bone graft was inserted without any periosteum attached to it. Neither can it be said that these grafts have been replaced by creeping substitution from the bones with which they were in contact. If this had been the case one would have expected radiological evidence in the form of a decalcified line of demarcation gradually spreading from the ends towards the centre of the graft.

It might, however, be argued that these grafts died and were replaced by an invasion of cells from the organizing haematoma which surrounded them, such cells subsequently becoming differentiated into bone elements. This suggestion it is impossible to refute, and it is in line with the teaching of Leriche and Policard that bone may form wherever there is a mass of primitive mesenchyma and an adequate supply of blood and calcium. But why postulate a difficult theory in these cases when it can be more simply assumed that at least a proportion of the bone cells of the original graft survived and proliferated?

Certain radiological appearances were common to each of these grafts. First, the coarse trabeculation of the original tibial graft became gradually transformed into bone of a denser and more finely trabeculated structure. Secondly, each case shows evidence of the development of a surface layer of homogeneous bone, as if the graft was attempting to differentiate itself into cortical and medullary structure. These radiological appearances seem to indicate that there was at least partial survival of cells throughout the whole substance of the graft.

The most important common factor in these cases, however, appears to be that each graft was transplanted into an area richly supplied with blood and devoid of any scar tissue. It would seem that when transplanted into such ideal surroundings even a cortical bone graft will survive and will rapidly become incorporated in the circulation of the host. These cases appear to emphasize once again that one of the chief functions of a bone-grafting operation must be the removal of scar tissue and the opening up of the whole vascular area for the promotion of osteogenesis at the site of fracture.

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ARGENTAFFIN (CARCINOID) TUMOURS OF THE SMALL INTESTINE

BY

A. ANDERSON BONAR, M.B., F.R.C.S.Ed.
Surgeon, Ashington Hospital

Argentaffin tumours are most commonly met with in the appendix, but it is now well recognized that they may occur in any part of the gastro-intestinal tract. According to McLeod (1944) about 283 cases of carcinoid tumours of the small intestine had been reported in the literature up to May, 1944. There is general agreement that, after the appendix, the most common site is the terminal ileum.

Carcinoid tumours of the appendix are generally stated to be innocent, but in the ileum the behaviour is quite different. Humphreys (1939), reviewing 152 cases, found that 37 (24.4%) had metastases. Dangremond (1942) in a study of 46 cases found that 24 (52%) had metastases. Ariel (1939) tabulated 111 cases of carcinoids reported in the literature since 1930. In this series metastases were reported in 33 cases (29.7%). Obviously, therefore, the tumour as found in the small intestine may behave as a metastasizing malignant growth, calling for radical surgical treatment.

Case Report

Mrs. P., aged 52, was admitted to hospital on April 24, 1943. The provisional diagnosis was chronic appendicitis. The history was that in the last two years she had had intermittent attacks of abdominal pain—five in all. The last attack occurred 14 days before admission. Each attack started with pain, at first felt in the right iliac fossa, but gradually spreading over the abdomen. When asked about the radiation of the pain, she stated that it tended to travel in a direction roughly following the course of the colon. The pain was of a colicky type. During each attack the bowel was constipated. The pain was severe enough to make her go to bed. On only one occasion did she vomit, though she often felt nauseated. Each attack lasted about four days. An interesting statement was that after the attack she invariably had diarrhoea. She was not certain as to the presence of distension during an attack. Examination was largely negative. She appeared to be a healthy woman, perhaps rather stout. The skin was clear, and there was no jaundice. The mucous membranes were well coloured and the tongue was clean. No abnormality was detected on examination of the chest and cardiovascular system. The urine was normal. The abdominal wall was rather stout and the muscles were flabby. No masses were palpable. Slight tenderness was noted in the right iliac fossa, and there was unusual gurgling. P.V. and P.R. examinations were negative.

In view of the history of ? obstructive attacks a barium enema *x*-ray examination was advised. This was carried out by Dr. D. Ramage, who reported as follows: "Apparently a developmental anomaly of the colon. The right flank is empty of colon; the caecum and ascending colon are near the midline. There is no evidence of filling defect." This unexpected report raised the question of recurring volvulus as an explanation of the symptoms, and operation was accordingly advised.

Operation was carried out on May 10. The abdomen was opened by an oblique muscle-cutting incision in the right iliac fossa. The caecum and ascending colon were found to have well-developed mesenteries. There was no distension of the caecum. The appendix was healthy. On further investigation a lesion of the ileum was found. The last few inches of the ileum were distorted by adhesion, and on palpation a hard mass was felt in the centre of the adherent bowel. The bowel proximal to the tumour was not distended. A presumptive diagnosis of scirrhous carcinoma was made. The mesenteric lymph nodes were not enlarged, and no secondary deposits were found in liver or peritoneum. In view of the proximity of the growth to the caecum, a radical ileocolectomy was performed, and the ileum anastomosed to the transverse colon by the side-to-end method. No difficulty was encountered, as the colon was extremely mobile. The wound was closed, with drainage. The patient made an excellent recovery, despite some wound sepsis. She was discharged home on June 5, and has remained in excellent health since.

The specimen, unopened, was sent to Prof. A. Bernard Shaw for opinion, and he reported as follows:

"The specimen consists of the lower end of the ileum, 16 cm. long, the caecum and ascending colon, and the appendix. The attached mesenteries are loaded with fat, and the site of extensive operative haemorrhage. At 4 cm. from the ileo-caecal junction there is a transverse constriction on the outer aspect of the ileum. Embedded in the constriction is a hard mass 2 by 5 cm., which projects into the lumen of the ileum. The opaque bright-yellow material constituting this involves the submucosa and subserosa, while the muscular coat passes through it. The appendix shows no gross change. Microscopically, this is an argentaffinoma of the ileum which has infiltrated the muscular and subserous coats. The neoplastic cells give a positive reaction to Masson's silver stain, thus establishing the identity of the tumour."

Discussion

It is not proposed to discuss the pathological histology of these tumours. Masson's theory (1928, 1930) that these tumours arise from the Kultschitzky cells of the crypts of Lieberkühn, appears to be generally accepted. The cells contain granules which acquire a dark-brown stain when treated with Masson's silver stain—hence the name "argentaffinoma." The most striking feature of these tumours is the bright yellow colour on section. Usually the growth projects into the lumen of the bowel as a smooth polypoidal mass, and obviously this may lead to attacks of intussusception. Occasionally the tumour takes an annular form, giving rise to a typical ring constriction of the affected bowel.

It is obvious from personal experience that these tumours are rare. Raiford (1933) recorded 29 carcinoid tumours—9 of the ileum—as occurring in 62,000 necropsy and surgical specimens examined at the Johns Hopkins Hospital. Ariel (1939) examined 47,045 specimens at the Mount Sinai Hospital, and found 31 carcinoids.

The appendix and the terminal ileum are the two most frequently affected sites in the gastro-intestinal tract, but, as mentioned above, there is a striking difference in the malignancy of the two types. All commentators are agreed that carcinoids of the appendix are innocent. But in the ileum there is no doubt that the tumour is almost as malignant as an adenocarcinoma. Quarry Wood (1936), quoting Humphreys, points out that the incidence of metastases in carcinoids of the ileum is 24.4%, whereas the frequency of metastases in adenocarcinoma is given as 38% by Schleips. In Quarry Wood's case a lymph node 2.5 cm. from the growth was the seat of a metastasis. McLeod cites one case in which the wall of the caecum was invaded, and a second case in which a mass of tumour cells was found in a large blood vessel of the mesentery. In the case under discussion the tumour cells had infiltrated the muscular and subserous layers. Ariel sums up the question of metastases thus:

"Metastases usually occur in the regional lymph nodes, the mesenteric fat, and, to a lesser degree, the liver. . . . Metastases have been recorded as follows: 29 in regional lymph nodes, 10 in the liver, 9 in the mesentery, 2 in the peritoneum, 1 in the inguinal lymph nodes, 1 in the peripancreatic and retroperitoneal lymph nodes, 1 in the testis, and 1 in the dura mater with compression of the spinal cord."

From the clinical viewpoint, the most common picture is one of recurring attacks of intestinal obstruction. The diagnosis arrived at on clinical grounds is most likely to be carcinoma of the colon, but the barium enema *x*-ray will negative this. It may be possible on *x*-ray examination to diagnose an obstruction of the terminal ileum, as in Quarry Wood's case, but many of the cases in the literature were not accurately diagnosed before laparotomy. In the case under review the presence of a gross congenital abnormality of the colon added to the difficulties, and, as mentioned, volvulus of the caecum was considered as a possible explanation of the symptoms.

In view of the evidence as to the malignancy of the tumour treatment must be radical, and as many of the growths are very close to the caecum an extensive resection of gut is necessary. The prognosis depends on the presence or otherwise of irremovable metastases. In the literature, only one reference to

the effect of *x*-ray therapy on these tumours was found, and unfortunately there was no final proof as to the nature of the tumour. The case is reported by Ariel (1939). A patient had had a resection of gut performed for a tumour of the terminal ileum, and section proved the growth to be a carcinoid. There were no metastases in the liver. Two months later a mass was found in the right iliac fossa, and a diagnosis of local recurrence was made. Deep *x*-ray therapy was given, and the mass disappeared. Ariel was of the opinion that the mass was a definite recurrence, and no doubt there were good reasons for coming to such a conclusion, but one cannot dogmatize, from this suggestive case, as to the value or otherwise of *x*-ray therapy in these growths.

Summary

A case of argentaffinoma (carcinoid tumour) of the ileum is reported.

These tumours are found most frequently in the appendix and the ileum. In the appendix they do not metastasize, but in the ileum secondary deposits are met with in 25% of cases.

The clinical picture is one of repeated attacks of intestinal obstruction.

The pre-operative diagnosis is difficult, and if an obstructive lesion of the terminal ileum is found it is most probable that it will be labelled carcinoma.

The appropriate treatment is radical removal.

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Medical Memoranda

Spontaneous Rupture of the Heart associated with a Road Accident

Two men were brought in dead to an East African military hospital with a history of having been knocked down by a lorry. Necropsies were performed within three hours of death, revealing in one of them extensive multiple fractures of the skull with severe laceration of the brain. The post-mortem findings in the other are described below.

FINDINGS AT NECROPSY

The body was that of a European male aged 40, about 5 ft. 7 in. (1.7 m.) tall, weighing between 12 and 13 st. (75–80 kg.). The chest, abdomen, and back were well covered with fat, which had a depth of 1½ in. (3.8 cm.) over parts of the abdominal wall. There were several superficial skin lacerations on all four limbs, particularly the right arm and leg; the face was scratched and bruised.

Examination of the skull revealed a subperiosteal haematoma over the vertex about 1½ in. in diameter overlying a fracture about 1 in. (2.5 cm.) long, depressed at the anterior end. The brain and meninges were intact, and, except for some bilateral pinpoint petechial haemorrhages on the cerebral surface and in the white matter, no abnormality was found. The pituitary fossa and gland appeared normal. No other bone injury was seen, and no evidence of disease or injury was present in the tongue, pharynx, salivary glands, larynx, trachea, or thyroid gland. The thoracic wall was intact, and the lungs, pleurae, and bronchi showed no abnormality. The heart and pericardium are described below.

On opening the abdomen the striking feature was the gross amount of fat in the greater omentum; this was much in excess of what is normally found. The spleen, pancreas, gall-bladder, stomach, and small and large intestines appeared normal. The liver was enlarged one fingerbreadth below the costal margin, firm in consistency, and with a firm lower edge. The cut section was pale and greasy, revealing a fatty liver. Both kidneys were embedded in deep pads of fat, and the retroperitoneal fat was definitely excessive; the kidneys, suprarenals, ureters, and bladder seemed normal.

Heart and Pericardium.—The pericardial sac was globular, and was distended with about 1/4 pint (140 ml.) of blood. The heart was contracted and almost empty. Both auricles appeared normal. The fat of the ventricular epicardium was increased both in thickness and in extent. This was particularly evident on the anterior wall of the right ventricle, which was thin, being reduced to one-eighth of an inch (0.3 cm.) or less in parts. In many places the muscle bundles were separated by small areas of adipose tissue, which here and there almost formed the entire thickness of the ventricular wall. Streaky yellow patches of adipose tissue running along the lines of the columnae carneae were evident beneath the endocardium of the right ventricle, the cavity of which was dilated in spite of the general contraction of the heart. Two linear ruptures were found in the anterior wall of the right ventricle communicating with the ventricular cavity, both about 1 in. long. The edges of the tears were uneven and irregular, but there was no evidence of recent bleeding or torn vessels along the edges, such as might be expected from a sudden rupture. One tear was situated about 1/2 in. (1.25 cm.) from the anterior interventricular branch of the left coronary artery (to which both were roughly parallel), about 1½ in. (3.75 cm.) to the right of this artery, and 1 in. (2.5 cm.) above the inferior heart border. The ventricular wall was thinnest in the region of these ruptures, and consisted as much of fat as of muscle. There were no signs of disease in the valves, coronary arteries, or aorta.

Death was attributed to haemopericardium due to spontaneous rupture of the heart, with fatty infiltration of the myocardium, part of a general obesity, as the predisposing cause.

COMMENT

The relation of this unusual death to the road accident arose. Whether the head injury itself could have caused death was difficult to answer, but it seemed unlikely; yet just as difficult was the poser: Which came first—rupture or accident? The lack of recent bleeding along the edges of the rupture indicates that they had gradually formed and slowly progressed until they were well established on the day of the accident, but of course actual ventricular-pericardial communication had not occurred. It seems likely that completion of the rents was imminent at the time of the accident, and death was inevitable within, say, a few weeks. Completion of the ruptures may have occurred *just before* the accident by a sudden rise of interventricular pressure due to fear or excitement. Alternatively, the accident occurred first, and the tears were completed, possibly, by the sudden contact of the chest wall with the ground.

SIMON SEVITT, M.Sc., M.D., M.R.C.P.I., D.P.H.,
Capt., R.A.M.C.; Graded Pathologist.

Herpes Zoster in an Isolated Community

The question of the relationship between the viruses responsible for herpes zoster and varicella has recently been discussed in these columns by Dr. James Taylor (*B.M.J.*, 1945, **2**, 385). That such a relationship exists is beyond dispute; there can be few general practitioners who have not observed an outbreak of chicken-pox following a case of herpes zoster or the appearance of zoster in a household afflicted by chicken-pox. The implication that herpes zoster is always caused by the virus of chicken-pox cannot, however, be accepted.

CASE HISTORIES

On the island of Tristan da Cunha, in the South Atlantic, there live some 220 persons, none of whom have ever suffered from varicella or any of the other exanthemata or infectious fevers. In 1942 their isolation was disturbed by the arrival of a party of Naval and South African personnel and the establishment of a station on their island. In May, 1943, I saw there a case of herpes zoster in a woman aged 70; the eruption was typical, and occurred over the outer side of the upper third of the right thigh. Such a condition had not been seen before by the islanders. There was no doubt as to the diagnosis.

The anticipated sequel—an epidemic of varicella—did not occur. No further cases of herpes were seen until December, 1943, when a man aged 79 developed typical lesions of intercostal distribution. Again no chicken-pox followed; but 3½ months later—in March, 1944—a third case occurred. The patient was a man aged 33, and the distribution was again intercostal. There had been no further cases when I left the island in July, 1944, nor had there been any case of chicken-pox.

All three patients made an uneventful recovery and the constitutional disturbance was not severe. Post-herpetic neuralgic pain occurred in one case; it was not severe, and lasted for some two months only.

COMMENT

If ever there were conditions in which an epidemic of chicken-pox might be expected to follow herpes zoster, they were present at Tristan da Cunha. Neither man, woman, nor child had any acquired immunity to the virus, and the people were living crowded in ill-ventilated, often dirty, two- and three-roomed cottages, yet no varicella occurred.

My interpretation of the above events is that herpes zoster can be caused by neurotropic viruses other than the virus of varicella. The interval which elapsed between the cases is grossly in excess of the alleged normal incubation period. It would appear, therefore, that there was present on the island, presumably among the Service personnel, a carrier of low-grade neurotropic virus, the virulence of which was not sufficient to cause any morbid condition among the naturally immune new-comers, but sufficient to produce typical herpes zoster among the non-immune islanders.

E. J. S. WOOLLEY, O.B.E., M.R.C.P.,
Surg. Lieut.-Cmdr., R.N.V.R.

Reviews

ON GROWTH AND FORM

Essays on Growth and Form presented to D'Arcy Wentworth Thompson. Edited by W. E. Le Gros Clark and P. B. Medawar. (Pp. 408; illustrated. 21s.) Oxford: The Clarendon Press. 1945.

D'Arcy Wentworth Thompson was appointed professor of biology at Dundee in 1884, and has held a chair at St. Andrews since 1897. Any critic who might complain "Sedet, aeternumque sedebit" is conclusively answered by the new edition of *On Growth and Form*, published in 1942, and running to 1,124 pages. This book reminds me of Greek geometry. I admire its elegance and ingenuity, but it is not always obvious what to do next. So often the author seems to have said the last word.

But the first edition, published in 1917, is at last beginning to bear intellectual fruit, and the volume before us is part of its harvest. The longest article, and that which will probably be of the greatest interest to medical readers, is that on nerve fibres, by J. Z. Young. This summarizes his own work and that of his colleagues during the war, which has already had some influence on surgery. He makes out a strong case for the view that a nerve fibre is a hollow tube containing fluid under pressure, due to the fact that the nerve cell is continually forcing more fluid along it. If the internal pressure falls off, the whole system breaks down, and the details of the breakdown are physically intelligible. Regeneration occurs at a roughly constant rate of about 4 mm. a day, and is due to a steady outflow of material from the body of the nerve cell. So far everything is mechanistic. But fibres which make connexion with end-organs hypertrophy, and those which do not do so disappear. So the author concludes on a decidedly unmechanistic note.

Prof. Le Gros Clark gives a similar mechanical analysis of the pattern of the folds in the cerebral cortex, and Dr. Danielli gives some very interesting facts regarding the surface forces in single cells. Dr. Astbury's article on molecular structures is an invaluable summary of the work which he and his colleagues have done on proteins, nucleic acid, polysaccharides, and other cell constituents. This work has only started, but the results are sufficiently striking. The fibrous proteins fall into two groups with different structures: an elastic group generally found inside cells, and including myosin, keratin, and fibrinogen, and an inelastic collagen group always found outside cells, including the proteins of tendon, cartilage, and fish scales. Many of the non-fibrous proteins—for example, egg albumin and casein—can be drawn out into fibres of the intracellular type, but lose their specific properties in the process. When we know as much about their structure in the globular form as we know about it in the fibrous form we shall probably understand how they manage to be specific as enzymes or antigens.

Dr. Woodger's paper is an attempt to give a logical basis to the notion of homology. I can best explain why I distrust it by quoting one sentence. "Consider any such time-slice of a zygote and the set of all time-slices which are exactly like it." I may be wrong, but I start out from the assumption that no two animals are *exactly* alike. If I am right, Dr. Woodger's logic will not solve the problem. If a physician has ever had two patients who were exactly alike he will agree with Dr. Woodger; if not, not.

Reeve and Huxley, Richards and Kavanagh, all deal with allometric growth—that is to say, growth in which one part grows quicker than another, and the form therefore changes. Neither has anything very fresh to say on the matter. Medawar, in "Size, Shape, and Age," probably has something fresh to say, since he combines a new mathematical approach with a new experimental technique. A tissue culture is placed in a medium in which Heaton's inhibitory factor is diffusing, so that the growth is slowed down on one side. He uses a mathematical method which is a development of one of D'Arcy Thompson's to represent the forms assumed, and draws an analogy with the different growth rates of parts of the human body. But Medawar's ideas are still somewhat embryonic, whereas the other four authors give useful summaries of a mass of careful work by themselves and others. Lotka gives a further development, at one point of considerable mathematical elegance, of his mathematical theory of population growth and decline. He ends on a note of gloom regarding the future fall of population, which seems to neglect the fact that in many countries, including both victors such as Britain and Czechoslovakia, and neutrals such as Sweden and Eire, the birth rate rose sharply during the war.

Dr. Berrill's paper on ascidian development is of interest because the ascidians are the animals most closely related to the vertebrates, which can develop from either a fertilized egg or a bud. A comparison of these two developments may have some bearing on human pathology. Dr. Wigglesworth's study of insect development is of wider interest, because he brings evidence that the parts of an insect are integrated not merely by hormones but by actual continuity between cells. For example, if two bugs are joined by a capillary tube the hormones from one induce moulting in the other. But they moult simultaneously only if their skins are allowed to heal together. Thus he suggests that "the epidermis is a chemical continuum upon which the cells are strung at intervals like beads upon a net." In fact the organism is not a mere colony of cells, but has some of the properties of a giant molecule.

The contribution which excited me most was Dr. Willmer's on tissue cultures. He suggests that cells should be classified not merely by their appearance and function in the body but by their behaviour under the standard conditions of tissue culture. Under such conditions some cells—for example, neurones—will not grow. But the remainder revert to one of three types. The epitheliocyte forms a membrane and spreads over surfaces. The mechanocyte, which may be derived from muscle, bone, cartilage, or connective tissue, becomes a fibroblast, and forms a network in culture. The amoebocyte does not form a tissue. Further, the mechanocytes alone need embryo juice and are very sensitive to arsenic; the amoebocyte is phagocytic; the epitheliocytes tend to produce keratin, the mechanocytes collagen, and so on. Dr. Willmer regards these three types as genera of cells, each with its own species, including the carcinoma cell among the epitheliocytes and the sarcoma among the mechanocytes. I do not know if his views will be accepted. If so they are of the first importance. If not, they will at least make a number of people think.

The whole volume is not only a tribute to a source of inspiration. It can be read with interest and profit by a wide circle. And very little of it will be too technical for the medical reader who wishes to keep in touch with the progress of thought concerning animal and human development.

J. B. S. HALDANE.

SENILE MENTAL DERANGEMENTS

Mental Disorders in Later Life. Edited by Oscar J. Kaplan. (Pp. 426; illustrated. $5.00 or 30s.) California: Stanford University Press; London: Oxford University Press.

In psychiatry, as in other branches of medicine, the emphasis is rightly placed on the study of the disorders of childhood; nevertheless it may well be, as is stated in the preface to this book, that the mental disorders of older people have been grievously neglected. As a population we are growing older, which makes it all the more important that we should do all we can to maintain bodily and mental health for as long as possible. Too often, when an elderly person shows signs of mental derangement, even the expert jumps to the conclusion that he is suffering from an irreversible degeneration and that nothing can be done.

Among the seventeen essays by distinguished experts collected in this book perhaps the most important are those on the neuroses of later maturity, the involutional psychoses, and the toxic delirious reactions of old age, since they show that the patient suffering from these conditions, though he may be well advanced in years, is not necessarily condemned to the inevitable deterioration of a dementia. It is pointed out that there is considerable similarity between the emotional stresses of the adolescent and of the ageing patient in that they are called upon to change a condition of security—in one case that of the protection of home and family, and in the other a position of personal prestige and satisfaction—for one of insecurity. It is the loss of status, whether of appearance, prowess, or social and economic position, which is so galling to the aged, and it is very necessary for the individual and society to plan for old age so that the individual may remain useful, interested, and respected for as long as is conceivably possible.

No doubt much could be done to prevent the evils of senility if over-exertion, over-eating and over-drinking, and various frustrations could be avoided, yet we know little enough about the causation of such an important condition as arteriosclerosis, or indeed of any of the degenerative processes. These essays cover the ground of senile mental derangements as thoroughly as can be expected in a book of 400 pages, and are both informative as to known facts and also stimulating in pointing out what an enormous amount of work remains to be done. Each essay is provided with a comprehensive bibliography, and an adequate index makes reference easy. This volume is certainly to be recommended, not only to psychiatrists but to all whose practice includes old people.

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The papers mostly describe standard plastic procedures, with illustrative cases. The descriptions are unfortunately rather sketchy and lacking in detail, which makes them of little use to the beginner and incapable of fair criticism by the expert. One or two new ideas are interesting and appear sound. The Brenthurst clamp for the extra-oral fixation of fractures, where needed, differs from other methods in that the bone is not penetrated, although a small skin incision is needed. The acrylic mould used in the reconstruction of eye sockets is a definite advance. The paper on metacarpo-phalangeal joint deformity is also worthy of study.

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Preparations and Appliances

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The problem of multiple injections has for a long time remained unconsidered until the introduction of systemic penicillin therapy. Several articles have been published on this subject, demonstrating devices designed to overcome the necessity for repeated skin puncture, but only with regard to penicillin therapy. To desensitize a serum-sensitive patient for antitetanus serum or to give small repeated doses of adrenaline in an asthmatic attack is even more distressing, especially where the patient is a child.

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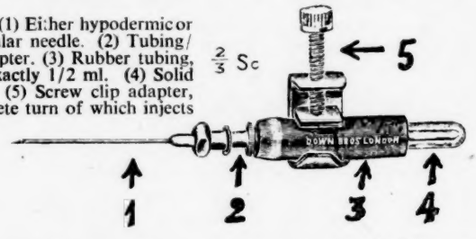

FIG. 1.—(1) Either hypodermic or intramuscular needle. (2) Tubing/needle adapter. (3) Rubber tubing, capacity exactly 1/2 ml. (4) Solid glass rod. (5) Screw clip adapter, one complete turn of which injects 0.1 ml.

use, easy to sterilize, and has been in constant use for the past 5 months for giving penicillin, A.T.S., and adrenaline with great satisfaction; it is particularly useful in treating children. It would also be useful in cases of eclampsia, tetanus, and status epilepticus, where repeated skin puncture for giving sedatives or serum would precipitate an attack of convulsions.

For desensitization, fill the pipette by plunging its needle through the cap of the serum bottle and screw down its screw clip to empty the rubber tubing and then unscrew again to fill it with A.T.S. Sterilize the skin in the usual way, insert the needle hypodermically, and fix the pipette to the skin with a piece of adhesive over the glass rod. The required dose of A.T.S. can be injected at intervals by turning the screw. If more than 1/2 ml. is required, unscrew clip with the pipette still *in situ* and inject more serum into the lumen of the rubber tube with a *fine* hypodermic needle.

For treating an asthmatic attack with adrenaline employ the same principle as above.

For systemic penicillin use an intramuscular needle for the pipette (instead of a hypodermic needle), and remove the screw clip. Fix the pipette preferably to the skin of the thigh (see Fig. 2) and inject

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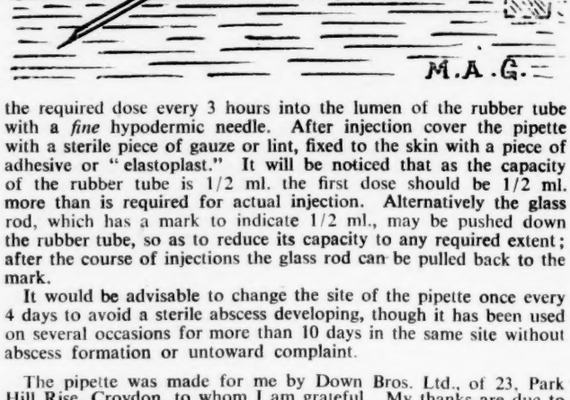

the required dose every 3 hours into the lumen of the rubber tube with a *fine* hypodermic needle. After injection cover the pipette with a sterile piece of gauze or lint, fixed to the skin with a piece of adhesive or "elastoplast." It will be noticed that as the capacity of the rubber tube is 1/2 ml. the first dose should be 1/2 ml. more than is required for actual injection. Alternatively the glass rod, which has a mark to indicate 1/2 ml., may be pushed down the rubber tube, so as to reduce its capacity to any required extent; after the course of injections the glass rod can be pulled back to the mark.

It would be advisable to change the site of the pipette once every 4 days to avoid a sterile abscess developing, though it has been used on several occasions for more than 10 days in the same site without abscess formation or untoward complaint.

The pipette was made for me by Down Bros. Ltd., of 23, Park Hill Rise, Croydon, to whom I am grateful. My thanks are due to Dr. D. R. Rigg, medical superintendent, for permission to publish this article; to all consultants, their assistants, and registrars in whose wards the work was carried out; to Mr. B. R. Jones, the pharmacist, for his help in supplying the materials; and to all sisters and nurses for their co-operation.

BRITISH MEDICAL JOURNAL

LONDON

SATURDAY MARCH 16 1946

THE HEALTH OF INDIA

India is headline news at the moment. She is claiming her right to independence from the British Empire. Her people are threatened with famine on an unprecedented scale. Faced with the necessity for meeting such immediate problems, there is a risk that fundamental reforms may be pushed on one side and forgotten. India is in dire need of health reform and of the conditions which make health possible. In 1943 the Government of India set up a predominantly Indian and non-official committee, under the chairmanship of Sir Joseph Bhore, to be known as the Health Survey and Development Committee, to survey the health services of the country and to advise on their better organization and development. This committee has just presented its report[1] in four volumes. Vol. I surveys the existing conditions. Vol. II in 532 pages covers recommendations for both a short- and a long-term plan. Vol. III contains appendices, and Vol. IV attempts to summarize the whole report in 90 pages. Those interested in India and in the fruitful development of human beings should read the first two volumes in their entirety. As the authors say: "The term health, whether it is applied to the individual or the community, implies more than an absence of sickness and indicates a state of harmonious functioning of the body and mind in relation to man's physical and social environment, so as to enable him to enjoy life to the fullest possible extent to reach his maximum level of productive capacity." They recognize that reformed health services alone are not enough; they must be integrated with reforms in agriculture, education, and transport. "The elimination of unemployment, the provision of a living wage, improvement in agriculture and industrial production, the development of village roads and rural communications . . . are all so many facets of a single problem calling urgently for attention."

Some idea of the size and nature of this problem can best be given by figures. The death rate for the general population in 1937 was 22.4 per 1,000 inhabitants, and for infants under 1 year 162 per 1,000 live births. The total deaths under 10 years as a percentage of the total deaths at all ages was in 1935–9 48.5%, compared with 10.0% in England and Wales. About 200,000 women die every year from causes associated with pregnancy and childbearing, and probably about 4 million suffer from varying degrees of disability. The average number of deaths from cholera was 144,924 and from smallpox 30,932—both preventable diseases. There are approximately 2.5 million infective tuberculosis patients in the country, and the total number of beds available for treatment is in the neighbourhood of 6,000; the number of doctors qualified for posts in tuberculosis institutions is 60 to 80. At least 100 million people suffer from malaria every year, and at least 2 million die each year either directly or indirectly as a result of malaria. The number of hospital beds available in British India for the treatment of general and special diseases is about 73,000, or about 0.24 bed per 1,000 population, as against 7.14 in England and Wales. There are to-day in India 47,000 doctors, some fully qualified, some with the licentiate training only—i.e., one doctor to 6,000 people. There are 7,000 nurses—i.e., one nurse to 43,000 people—750 health visitors, 5,000 midwives, 75 qualified pharmacologists, and 1,000 dentists.

Apart from active disease, the first essential of health is absent—namely, adequate nutrition. Undernutrition and malnutrition are widespread. The majority of the people live on diets lacking in calories, salts, vitamins, and protein. To-day they face absolute famine, but in the past pre-famine conditions have been general. In addition to general lowering of efficiency and resistance to disease, deficiency conditions are rampant. The simplest prerequisites of healthy living—adequate nutrition, housing, sanitation, and safe drinking-water—are lacking, except for certain privileged individuals living in the larger cities.

In making constructive plans to meet the grim situation revealed in the survey the members of the Bhore Committee have decided to accept the following principles: (1) that under the conditions existing in India medical services should be free to all and provided by a salaried service; (2) that in view of the complexity of modern medical practice the health services should ultimately provide all consultant, laboratory, and institutional facilities necessary for diagnosis and treatment; (3) the health programme must from the beginning lay special emphasis on preventive work, and on maintaining the closest links between preventive and curative medicine—"The doctor of the future should be a social physician protecting the people and guiding them to a healthier and happier life"; (4) care of the rural areas must be considered the most urgent need. The long-term programme looks to an organization in each Province under a Ministry of Health divided into district organizations each caring for 3,000,000 people; secondary units; and finally primary units, each of which would look after 25,000 people. The short-term programme follows somewhat similar lines but is less elaborate, largely owing to the shortage of trained personnel. It contemplates, however, a number of units concerned with both preventive and curative medicine for the people as a whole, together with special health services for mothers and children, school-children, and industrial workers, as well as for dealing with the more important diseases prevalent in India, such as malaria, tuberculosis, venereal disease, leprosy, and mental diseases.

It is reckoned that, at a minimum, by 1971 there should be 185,000 doctors, 740,000 nurses, 74,000 health visitors, 100,000 midwives, 62,000 pharmacists, and 92,500 dentists. Both long- and short-term schemes rightly concentrate upon the provision of medical aid to the rural areas. The primitive and squalid conditions of the villages associated with abject poverty cannot be imagined, but the few areas where

[1] Report of the Health Survey and Development Committee, Government of India Press, New Delhi, 1946.

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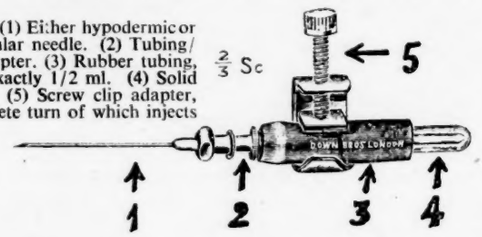

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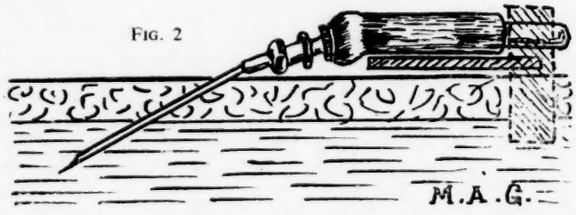

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THE HEALTH OF INDIA

India is headline news at the moment. She is claiming her right to independence from the British Empire. Her people are threatened with famine on an unprecedented scale. Faced with the necessity for meeting such immediate problems, there is a risk that fundamental reforms may be pushed on one side and forgotten. India is in dire need of health reform and of the conditions which make health possible. In 1943 the Government of India set up a predominantly Indian and non-official committee, under the chairmanship of Sir Joseph Bhore, to be known as the Health Survey and Development Committee, to survey the health services of the country and to advise on their better organization and development. This committee has just presented its report[1] in four volumes. Vol. I surveys the existing conditions. Vol. II in 532 pages covers recommendations for both a short- and a long-term plan. Vol. III contains appendices, and Vol. IV attempts to summarize the whole report in 90 pages. Those interested in India and in the fruitful development of human beings should read the first two volumes in their entirety. As the authors say: "The term health, whether it is applied to the individual or the community, implies more than an absence of sickness and indicates a state of harmonious functioning of the body and mind in relation to man's physical and social environment, so as to enable him to enjoy life to the fullest possible extent to reach his maximum level of productive capacity." They recognize that reformed health services alone are not enough; they must be integrated with reforms in agriculture, education, and transport. "The elimination of unemployment, the provision of a living wage, improvement in agriculture and industrial production, the development of village roads and rural communications . . . are all so many facets of a single problem calling urgently for attention."

Some idea of the size and nature of this problem can best be given by figures. The death rate for the general population in 1937 was 22.4 per 1,000 inhabitants, and for infants under 1 year 162 per 1,000 live births. The total deaths under 10 years as a percentage of the total deaths at all ages was in 1935–9 48.5%, compared with 10.0% in England and Wales. About 200,000 women die every year from causes associated with pregnancy and childbearing, and probably about 4 million suffer from varying degrees of disability. The average number of deaths from cholera was 144,924 and from smallpox 30,932—both preventable diseases. There are approximately 2.5 million infective tuberculosis patients in the country, and the total number of beds available for treatment is in the neighbourhood of 6,000; the number of doctors qualified for posts in tuberculosis institutions is 60 to 80. At least 100 million people suffer from malaria every year, and at least 2 million die each year either directly or indirectly as a result of malaria. The number of hospital beds available in British India for the treatment of general and special diseases is about 73,000, or about 0.24 bed per 1,000 population, as against 7.14 in England and Wales. There are to-day in India 47,000 doctors, some fully qualified, some with the licentiate training only—i.e., one doctor to 6,000 people. There are 7,000 nurses—i.e., one nurse to 43,000 people—750 health visitors, 5,000 midwives, 75 qualified pharmacologists, and 1,000 dentists.

Apart from active disease, the first essential of health is absent—namely, adequate nutrition. Undernutrition and malnutrition are widespread. The majority of the people live on diets lacking in calories, salts, vitamins, and protein. To-day they face absolute famine, but in the past pre-famine conditions have been general. In addition to general lowering of efficiency and resistance to disease, deficiency conditions are rampant. The simplest prerequisites of healthy living—adequate nutrition, housing, sanitation, and safe drinking-water—are lacking, except for certain privileged individuals living in the larger cities.

In making constructive plans to meet the grim situation revealed in the survey the members of the Bhore Committee have decided to accept the following principles: (1) that under the conditions existing in India medical services should be free to all and provided by a salaried service; (2) that in view of the complexity of modern medical practice the health services should ultimately provide all consultant, laboratory, and institutional facilities necessary for diagnosis and treatment; (3) the health programme must from the beginning lay special emphasis on preventive work, and on maintaining the closest links between preventive and curative medicine—"The doctor of the future should be a social physician protecting the people and guiding them to a healthier and happier life"; (4) care of the rural areas must be considered the most urgent need. The long-term programme looks to an organization in each Province under a Ministry of Health divided into district organizations each caring for 3,000,000 people; secondary units; and finally primary units, each of which would look after 25,000 people. The short-term programme follows somewhat similar lines but is less elaborate, largely owing to the shortage of trained personnel. It contemplates, however, a number of units concerned with both preventive and curative medicine for the people as a whole, together with special health services for mothers and children, schoolchildren, and industrial workers, as well as for dealing with the more important diseases prevalent in India, such as malaria, tuberculosis, venereal disease, leprosy, and mental diseases.

It is reckoned that, at a minimum, by 1971 there should be 185,000 doctors, 740,000 nurses, 74,000 health visitors, 100,000 midwives, 62,000 pharmacists, and 92,500 dentists. Both long- and short-term schemes rightly concentrate upon the provision of medical aid to the rural areas. The primitive and squalid conditions of the villages associated with abject poverty cannot be imagined, but the few areas where

[1] Report of the Health Survey and Development Committee, Government of India Press, New Delhi, 1946.

experimental schemes have been in existence, like the district run by the All-India Institute of Hygiene and Public Health and certain model schemes in the Punjab, show that, given encouragement and help, the Indian villager is eager and able to put into practice the essential laws of health. In the presence of good scientific medicine and education old customs and traditions lose their force. The indigenous systems of medicine flourish because there is no alternative. As a demonstration of what may be achieved by co-ordinated effort it is suggested that the Central Government should immediately implement the proposals for reconstruction not only of the health services but of education, agriculture, animal husbandry, and industry in Delhi Province, which for certain administrative reasons is particularly suitable for such an attempt. Associated with these plans for a complete medical service for the people are others concerned with the training of persons necessary to staff the service. The provision of such personnel is obviously the first essential to the success of any scheme, and here obviously is where Britain can and must help a courageous scheme of reconstruction by offering post-graduate training facilities to carefully chosen graduate students in all fields of the health services.

Sir John Megaw, whose lecture on the health of India was published last week, might claim that such schemes, far from helping India, may make her plight only more desperate. He sees her rising population as the root cause of the health problem. There will, he considers, always be a gap between the amount of food available and the number of mouths to be fed; therefore there will inevitably be malnutrition as the basis of ill-health unless something is done to restrict the growth of population. This he considers can be achieved only by changing the outlook on life of the people. The Bhore Committee recognizes that no programme of social reconstruction can afford to ignore the implications of the population problem. It realizes the difficulties inherent, particularly in a country with the varied religious beliefs of India, in achieving a reduction in the rate of additions to population, but it hopes that this may in time be achieved by raising the age of marriage for girls, improving the standard of living, and by intentional limitation of families. In the meantime their social instincts, as must those of all civilized people, prevent them from withholding reasonable health services for the nation for fear of their life-saving effect.

It is easy to criticize the schemes in the Bhore report as too elaborate and too ambitious. What matters is that a group of Indians and Englishmen representative of different parties and different beliefs have together reviewed the weighty problems involved and have together produced an agreed scheme, characterized by both vision and attention to practical detail, for the health development of India. The problem has been stated, in a dry analytical manner, of a vast nation short of food, short of sanitation, short of water, short of medical care. Men of good will from all parties in the State have hammered out a plan to build up a healthy nation. The future Government of India, whatever it may be, has been given a blue-print for her health services which it will do well to implement at the earliest possible opportunity. Health must stand outside politics. Its safeguarding should not wait upon constitution-making.

PENICILLIN IN BACTERIAL ENDOCARDITIS

Subacute bacterial endocarditis stands apart from all other infections due to the common cocci in its resistance to treatment. Since the earliest days of penicillin therapy this disease has figured as the last stronghold of streptococcal infection, on which an attack could be made only when an overwhelming force had been recruited. We have referred from time to time to the earlier moves in this campaign, and to the restrictions which have been placed on the use of penicillin for this purpose. The results in the first few groups of cases treated in the U.S.A.—usually with doses inadequate by present standards—were not altogether encouraging, and at a time when even a patient with staphylococcal septicaemia might not always be able to get penicillin its use for so problematic a benefit seemed unjustified. Moreover, the first pronounced success was achieved only by using quantities of penicillin which then appeared grossly extravagant, although they are now commonplace and have even been far surpassed. The protests which first greeted these attempts in the U.S.A. were extinguished by rapidly mounting production, and the treatment of subacute bacterial endocarditis with penicillin has now been in progress at many American centres for some two years. The development of penicillin therapy in this country has been hampered by greater scarcity of supplies, and it was not until the beginning of last year that a decision was taken to allot a certain quantity to the treatment of this disease. Its distribution and the manner of its use were entrusted to a committee of the Medical Research Council, whose first report will be found on the opening page of this *Journal*.

This report is a condensed statement by the secretary of the Penicillin Clinical Trials Committee, Prof. R. V. Christie, embodying the results obtained at 14 centres established by the committee. The series of cases so assembled is the largest yet to be published, and permits of statistical analysis in some detail. It deals with 147 patients, of whom 81 have been apparently cured—a satisfactory proportion which is likely to increase somewhat in the future when the lessons which have been learned during this investigation have been generally applied. The main object was to establish an optimum system of dosage, and by giving a constant total dose at different rates it was clearly shown that the first essential is prolonged treatment. Taking, then, the necessary period as 28 days, daily doses of different magnitude were compared. In assessing these results the important criterion is the relapse rate. A certain proportion of deaths during treatment owing to more or less mechanical accidents is inevitable: what matters is whether the infection is extinguished in patients who survive this period. Judged from this standpoint, a dose of 500,000 units a day is superior to lesser quantities; among 24 patients so treated the relapse rate was *nil*. The report also deals with policy and prognosis in re-treatment, and with the relation between prognosis and the degree of sensitivity of the infecting organism to penicillin. Although the single example of *Haemophilus* endocarditis in the series and two cases due to exceptionally resistant streptococci were frank failures, within limits not quite so wide as this

the coefficient of resistance of the organism did not appear to affect the results of treatment.

We also print a report dealing in more detail with the cases treated at one of these centres. G. E. S. Ward and his colleagues at the Middlesex Hospital have treated 18 patients, of whom only 1 failed to respond to treatment; 3 died in consequence of mechanical accidents, leaving 14 whose infection has been overcome, although 2 of these are threatened with heart failure. All these patients were given 480,000 units a day for 28 days by three-hourly intramuscular injection. Opinion is apparently divided on the relative merits—whether for the patient's comfort or for therapeutic efficiency—of such divided doses and continuous administration by intramuscular drip. It will be recalled that the original method of administration employed by Florey and his colleagues at Oxford was by continuous intravenous drip; this was abandoned in favour of spaced intramuscular injections owing to the frequency of venous thrombosis, due mainly to impurities in the penicillin then available. The continuous intramuscular drip is a compromise between these two methods which has given much satisfaction in some hands, although irregularities in the rate of flow have sometimes been troublesome. For the treatment of bacterial endocarditis Jessamine R. Goerner, A. J. Geiger, and Francis G. Blake[1] have reverted to the original method. Evidently the greater purity of the present-day penicillin has obviated its main drawback, and these authors claim for it freedom from trouble, convenience to the patient, and the regular maintenance of the desired level in the blood. They illustrate a group of three patients, two of them sitting up in chairs and one playing cards, all with delivery tubes splinted to their arms. Apart from any question of the patient's comfort, the respective merits of continuous and intermittent injection are still unsettled as regards their therapeutic effect: these authors claim that their own results strongly favour the continuous method. They treated 12 patients, employing a routine dose of 240,000 units a day for 3 or 4 weeks. The dose was increased and the treatment prolonged further if the initial response was unfavourable. Only one patient failed, for no ascertainable reason, to respond even to repeated courses; the remainder are all alive and well, in some cases after more than a year. A feature both of this report and of that from the Middlesex Hospital is the emphasis on eradicating foci of sepsis. The infection in subacute bacterial endocarditis is derived from the mouth, and when its actual point of origin is an apical abscess this focus should be eradicated in order to prevent recurrence. Numbers of extractions were found necessary for this reason, and were performed "under penicillin cover"—that is to say, penicillin was administered over a period of at least several days, during which the extraction was done. Heparin was used in none of the English cases and in only one of this American series, this being the single failure; here heparin was brought in when penicillin alone had failed, but without benefit.

These results, and others from the U.S.A. to which we have referred recently, establish the penicillin treatment of bacterial endocarditis on a sure basis. While the ultimate prognosis still involves an element of uncertainty, it is clear that in a majority of cases the infection can be eradicated and the patient restored to normal health, except in so far as permanent valvular damage impairs this. Since this treatment will now presumably be given increasingly widely, it should perhaps be emphasized that the diagnosis must be beyond doubt before this arduous and costly proceeding is undertaken; one or preferably more unequivocal positive blood cultures are essential. In the treatment itself the prime necessity is to continue adequate dosage without any intermission for a month. It is a most reassuring feature of the extensive British series published to-day that relapse was most exceptional more than forty days after treatment had finished. If relapse does occur at an earlier stage a further full course may be undertaken with at least moderate prospects of success: 8 out of 26 such patients in this series finally recovered.

[1] *Ann. intern. Med.*, 1945, **23**, 491.

TOXICITY OF URANIUM

With the increasing interest in the development of atomic energy the toxicity of uranium becomes of the highest importance. In the U.S.A. nearly 70,000 people were employed over a period of three years to produce two atomic bombs. The secrecy surrounding these factories is complete, but we are led to believe that there have been no cases of serious poisoning. Uranium is radio-active, and this property has long been thought to be the cause of the high incidence of carcinoma of lung among the miners of Schneeberg and Joachimstal in Czechoslovakia. Fairhall,[1] reviewing the inorganic industrial hazards, pointed out that the metal could be detected by means of a sensitive Geiger-Mueller counter in amounts as small as 10^{-12} grammes. He states that the metal is used to increase the hardness of steel, in colouring glass a fluorescent canary colour, and as the black oxide for red and black in the ceramic industry. It is used as a catalyst. Uranium oxide also has a new and important industrial application in connexion with the elimination of the effect of current surges in powerful projection lamps. Fairhall says that uranium and its salts are highly toxic, and that chronic nephritis and hepatic degeneration have occurred, but no reference, however, is made to its carcinogenic properties or its effects on haemopoiesis. It is likely to be many years before the full effects on these systems are known. Wiesner[2] has drawn attention to possible biological dangers from atomic fission, the results of which it may take even longer to discover.

From the U.S.A. Gustafson, Koletsky, and Free[3] showed that dogs given uranyl nitrate intravenously developed severe tubular necrosis of the kidneys: anuria appeared on the fifth day, and the dogs died within a fortnight. The blood urea rose to 360 mg. per 100 ml. on the tenth day, the blood creatinine rose to 25.8 mg., and the serum chlorides fell to 61.2 milli-equivalents per litre. At necropsy a brown precipitate of uranium was found in the necrotic debris obstructing the lumens of the descending segments of the proximal convoluted tubules. Holman and Douglas[4] made calibration curves of the alpha particle activity of standard dilutions of uranium in blood plasma, and thus made use

[1] *Physiol. Rev.*, 1945, **25**, 182.
[2] *Lancet*, 1946, **1**, 33.
[3] *Arch. intern. Med.*, 1944, **74**, 416.
[4] *Proc. Soc. exp. Biol.*, N.Y., 1944, **57**, 72.

of the natural radio-activity for tracer studies; they showed that in dogs given intravenous uranium radio-activity in the blood stream was minimal after four hours and in twenty-four hours had returned to normal levels; 65% of the uranium was passed in the urine in the same period. The dogs, however, still died unless they were also treated with sodium citrate. Gustafson and his colleagues, as well as Darnelly, Ross, Meroney, and Holman,[5] confirmed that sodium citrate, given either orally or intravenously, protects the kidney against uranium poisoning; the latter authors showed that by the third week two-thirds of the damaged tubules were lined by newly formed flattened epithelium, and that nine months after the injection normal broad columnar epithelium lined the proximal convoluted tubules. Unfortunately, at present, there is no satisfactory explanation why sodium citrate protects against a lethal dose of uranium nitrate.

TOXICITY OF D.D.T.

D.D.T. is now available to the public and is being more and more widely used. At the same time further information is coming to hand about its toxicity to man and other vertebrates. The first fatal case of D.D.T. poisoning was recorded by Hill and Robinson[6]: a negro child aged 1 year drank about an ounce of 5% D.D.T. in crude kerosene. Atropine 1/400 gr. (0.16 mg.) was given and the stomach washed out about three hours later, but death from respiratory failure occurred at four hours. The lethal dose of D.D.T. was surprisingly low—apparently about 150 mg. per kg. Balaban,[7] however, points out that the toxic effect of the kerosene carrier alone might have been quite considerable. An experimental study of D.D.T. intoxication in man is reported by Case.[8] Two men lived in a small chamber painted with D.D.T. distemper and subsequently covered with a thin film of lubricating oil. Temperature and humidity were kept high, and the men, who wore short trunks only, had to sit so that a large area of skin was always in contact with the oily walls. Toxic effects were produced which were reflected in changes in the blood picture. Symptoms of tiredness and aching were experienced, and it is stated that several weeks passed before there was a return to normality. While it is clear that D.D.T. intoxication may result from severe exposures, it is difficult to know what reliance should be placed on the persistent subjective symptoms. Dangerfield,[9] in a recent letter, suggests that the symptoms described by Wigglesworth[10] were probably exaggerated by nervous anxiety. He records extensive experiments in which solutions and pastes of D.D.T. in acetone were applied to the hands of volunteers, who subsequently experienced no ill effects.

A study of possible hazards from the use of D.D.T. aerosols has been made by Neal and others[11] on a variety of test animals. They state that the aerosols were insecticidally efficient at air concentrations of 0.004 to 0.007 mg. D.D.T. per litre. In order to produce serious intoxication in the test animals they had to use concentrations of the order of 20 to 30 mg. D.D.T. per litre; so there seems to be a safety margin of 3,000 to 4,000 times the normal insecticidal dose of aerosols. Tests of the toxicity of aerosol concentrates and pathological examinations gave similar results to those summarized previously in this *Journal*.[12 13] Small and young animals were more susceptible than larger and older animals. Dogs were particularly resistant—an observation which conflicts with that of Hill and Robinson,[6] in which two dogs died as a result of a single spray treatment of 5% D.D.T. in kerosene applied for demodex eczema.

The possible ill effect of D.D.T. on wild life has been widely discussed. The most likely vertebrates to suffer are fish. Emulsions or suspensions of D.D.T. above 0.1 part in a million are toxic to goldfish.[14 15] During field experiments with mosquito larvicides containing D.D.T. Ginsbury[14] observed that it had a harmful effect on black bass, catfish, and salt-water minnows. Eide and others[15] showed that other cold-blooded aquatic life, such as frogs, snakes, crayfish, spiders, and insects, could be affected by D.D.T. suspensions, but during the trials warm-blooded animals got off scot-free. It was concluded, however, that fish and other vertebrates were not poisoned by dosage rates suitable for mosquito control.

SMALLPOX

Service men and women in large numbers are returning to this country by aeroplane and ship from places where variola major is endemic, and they or their kit may be infected. Many of them are so well vaccinated that should they develop the disease the constitutional symptoms may be so slight and the rash so modified and sparse as not to inconvenience them (the same is, of course, true of well-vaccinated persons who have not been out of the country); should they seek medical advice it is possible that a diagnosis of variola major may not be made in the absence of practically all the classical symptoms and signs of this disease. Two such cases in Hampstead Metropolitan Borough and Thurrock Urban District have given rise to localized outbreaks, and in both the diagnosis was made possible only by later events. Up to March 12 eleven subsequent cases (two fatal) have occurred; ten of these were probably direct contacts, and one (fatal) was infected by clothing. Both the fatal cases were haemorrhagic. In the circumstances it is important that all medical practitioners and hospital medical officers should bear smallpox in mind at the present time, and they are reminded that doubtful cases should be reported to the Medical Officer of Health, who will, if necessary, arrange for the gratuitous services of a consultant.

The King will open in London on Monday, June 17, an Empire Scientific Conference, arranged by the Royal Society, of which he is Patron. The conference will provide opportunities for men of science from the United Kingdom, most of the Dominions, India, and the Colonies, to discuss their problems in private. The subjects to be considered include nutrition and medical science. The Royal Society's conference will move to Cambridge for a week on June 22, and to Oxford for another week on June 29, returning to London on July 6. It is to be followed by the Commonwealth Scientific Official Conference in London from July 9 to 20, inclusive.

Dr. J. M. H. Campbell will deliver the Lumleian Lectures before the Royal College of Physicians of London on Tuesday, April 16, and Thursday, April 18, at 5 p.m. at the College, Pall Mall East; subject: "The Paroxysmal Tachycardias."

[5] *Proc. Soc. exp. Biol.*, N.Y., 1944, **57**, 72.
[6] *British Medical Journal*, 1945, **2**, 845.
[7] Ibid., 1946, **1**, 147.
[8] Ibid., 1945, **2**, 842.
[9] Ibid., 1946, **1**, 27.
[10] Ibid., 1945, **1**, 517.
[11] *Publ. Hlth. Rep. Wash.*, 1945, Suppl. No. 183.
[12] *British Medical Journal*, 1944, **2**, 217.
[13] Ibid., 1945, **2**, 260.
[14] *J. econ. Ent.*, 1945, **38**, 274.
[15] Ibid., 1945, **38**, 493.

SOCIAL MEDICINE IN OLD AGE

BY

TREVOR H. HOWELL, M.R.C.P.Ed.

Late Deputy Physician and Surgeon, Royal Hospital, Chelsea

The number of elderly people in this country is now higher than it has ever been and is still increasing. According to the estimates in the Beveridge report, over 20% of the population will be either women over 60 or men over 65 by the year 1971, if present trends continue. It would seem advisable, therefore, to consider some of the social and medical problems which may result from this increase of old people. These same problems are present to-day, but in a far less acute form than they will soon develop. Now is the time to seek a solution.

Economic Aspects of Old Age

Until recently the shift in age of the population has been partly obscured by wartime conditions. Elderly men and women could earn good wages in domestic or industrial employment, which they would not do under normal circumstances. The war also gave them fresh interests in life, enabled them to meet new people, and widened their horizon. For the time being they felt themselves to be useful members of the community. But this is changing. As younger men and women are released from the Forces and factories older workers become less desirable. They become first unemployed, then unemployable; and an old man or woman without steady occupation grows infirm of body and mind more quickly than one who has something to do. It therefore seems possible that a number of dependent or helpless old folk will need to be looked after, either by their relatives or by public bodies. In the past disease has kept down the numbers of such people, but modern therapeutics is changing all that, as Molière might have said. The facilities which are available at the present time may not be adequate to meet the increased demands which will arise in the near future. It is therefore worth while considering the problem from the viewpoints of economic state and of social medicine, which are so closely related that they react on one another considerably.

It is evident that elderly people with some private means can enjoy the evening of their life without discomfort. They can afford to pay someone to do their domestic work, and are thus spared any undue physical strain or mental worry as a rule. Even the married couple drawing the old-age pension can carry on in their own home quite comfortably unless infirmity overtakes one of them. If the wife is active she can cope with an invalid husband, but otherwise the home is broken up for lack of anyone to do the domestic work. Similarly, an elderly widow or spinster can get along fairly well while she is healthy; but as she becomes more and more feeble, either in body or in mind, a choice has to be made eventually between appealing to relatives for help or entering an institution. Neither of these alternatives is pleasant at an age when prejudices are fixed and mental adaptation is difficult. The music-hall joke about the mother-in-law living with a young couple implies an obverse side which is rather pitiful. This combination of poverty and infirmity is one which causes a great deal of unhappiness in old people. The time is ripe for an attempt to prevent this as much as possible.

Domestic Help during Illness

In addition to these economic aspects of old age, certain other facets present themselves to the general practitioner and often cause him some worry. The first of these is related to the problems mentioned above. Many old women live alone and do their own housework. When they are taken ill domestic help is needed as well as medical and nursing attention. The district nurse will look after the patient, but there is nobody to take charge of the house. And it is not always desirable or convenient to send such people to hospital. Very often they do not wish to go there. Such patients may be taken ill suddenly and be unable to send for a doctor. It may be two or three days before a neighbour or some other visitor calls to see them, during which time anything might happen. Another problem is that of the single daughter who looks after an aged mother. If she becomes ill, then two patients, not one, need help and attention. Separation from the parent is so often a necessary part of the treatment of such a case. At times an old person has some recurrent disorder, like a urinary infection, epileptiform attacks, and so on, being well one day but ill the next. These patients do not like the idea of going into hospital, nor do the hospital authorities like admitting them. Yet they often need more care and attention than is available at home. Another difficulty, most marked in country districts, is that of cases which need prolonged observation and investigation. It is not usual to get the highest "opinions" in the infirmaries which admit senile and chronic cases. Another point worthy of mention is the difficulty of getting any physiotherapy in many parts of the country. So much disease in old folk responds better to various forms of heat and electric treatment than to drugs alone. But the greatest obstacle of all is the lack of interest in geriatric medicine, and the general feeling that nothing can be done for old age.

Since these problems and others akin to them will probably become intensified in the future, it is as well to look at some methods of solving them. First would seem to come some sort of home help and supervision for elderly invalids, especially those who live alone. Next, it is important to stop overcrowding of the institutions for the aged. Thirdly, the medical facilities available should be improved. Finally, the differing types of senile patients must be sorted out into those who need general care, nursing in sick wards, or complete attention. Above all, it is essential to see that institutions for old people do not develop into soulless barracks. They must become pervaded by the spirit of kindliness, sympathy, and humanity.

It is probably not feasible to increase the number of old persons who are employed in domestic or industrial work. But a great deal can be done for the elderly unemployed to keep them active, alert, and occupied. If such people were visited regularly by trained personnel, akin to the present health visitors, they could be helped, advised, kept interested in hobbies or various pursuits, and assisted in many ways. Such visitors would be most useful if they had access to doctors, district nurses, hospitals, and sources of domestic help. By helping to tide over bad times they would defer for several years the entry of many old folk into institutions. Thus elderly men and women could be independent and happy in their own homes as long as possible. This would do much to lessen the troubles and worries which afflict so many old people.

Homelike Institutions

When at last it became necessary for an elderly person to enter some institution, he (or she) would not always need complete nursing and attention. Once the domestic burden was removed it would be possible for the new inmate to look after himself to some extent, to do a little in the garden, to mend, and so on. Some privacy and a simple but useful occupation would preserve self-respect and go far to prevent further senile deterioration. It should not be necessary to limit freedom of movement or to enforce too rigid a time-table. Small apartments of the almshouse type, preferably without stairs, would be suitable for this type of person if domestic help and some nursing supervision were provided. A small community of this sort may be found at Pearson's Retreat, Worthing. Here old people live in two-roomed apartments with a resident nurse to keep an eye on them and to look after their health. It might be necessary to provide communal meals, and a cafeteria system would have much to commend it. If places like this were in being the larger institutions could be reserved for those who were really infirm, senile, and sick in body or mind. Only patients needing medical attention and nursing care would have to be admitted. Inmates could be segregated into those who were ill, those who were senile, those who were incontinent, and those suffering from senile dementia. In this way a sick old woman would not have her sleep disturbed by the shouts of the mentally deranged patients, nor would an alert but crippled old man be depressed by the sight of cases dying beside him.

These institutions should preferably be attached to a general hospital with proper facilities for all necessary investigations. The training of both medical students and nurses would benefit if they had experience of work among such senile and chronic cases. The post-mortem room would offer a great deal of material interesting to the pathologist, and there is no reason why valuable research should not be carried out in such hospitals. It would not be difficult to attain a high standard

of medicine in such a "chronic" institution if consultants and specialists were invited and encouraged to take part in the work there regularly. Medical activity would also give rise to a pleasanter atmosphere among both staff and patients. Old people are happier when they feel that an interest is being taken in their welfare and activities. They thrive on individual attention and dislike any mass treatment. Their own possessions, their own bed, their own seat at table—these mean much more to them than to younger persons. Even men who have spent much of their lives in the regular Army, and are used to a regimented existence, are happier and more amenable to reason when given some degree of privacy and personal rights. But how is this to be done? In apartments of the almshouse type this exists to some extent. In hospital wards for the sick personal freedom must be limited, of necessity, to allow the regular routine of work to be carried out. But, outside these two classes, a solution on the lines of the "bunks" in the long wards of the Royal Hospital, Chelsea, might be practicable. Here each old pensioner has a small cubicle containing his bed, chair, table, and locker. There is an aperture which he can curtain off, or shutter as he chooses, and a door which he can close. Thus he gets a sense of privacy and personal possession which helps to maintain his self-respect.

Freedom of movement, both within the building and to some extent outside it, should be allowed. Strict segregation of the sexes is unnecessary. It seems cruel, when they can no longer look after themselves, to separate couples who have lived together for many years of happy married life. Recreation of suitable kinds should be encouraged, games, gardening, and so on being favoured. If some community spirit can be roused and fostered, the well-being of all the inmates will flourish. Also, self-reliance will be preserved, and this will postpone the day when the old person becomes helpless and dependent on others for everything. Some care and thought will be needed for the naming of such institutions, in order to avoid a stigma derived from association with the workhouse infirmary, etc. Finally it must be stressed again that the personal attitude of the staff in these homes and infirmaries is the most important factor in making them happy and successful.

Conclusion

To conclude and summarize these remarks: it is urged that consideration should be given to the need for making happy the last years of poor and lonely old people. If they can be given some domestic help, together with supervision and nursing attention, while the public assistance infirmaries are allowed to become medically active centres with a truly humane atmosphere, then a great step forward will have been taken. Sympathy for the sorrows of old age is not enough: it is time to translate it into action.

MEDICAL AID TO CHINA

[FROM A CORRESPONDENT]

Early in 1939 the victory of Franco had resulted in the internment in France, under bad conditions, of a number of refugees. Among them were doctors of various nationalities who had served with the Republican army. At the same time China was in great need of medical help, and a committee—the Medical Aid to China Committee—was formed, mostly of medical men and women, and succeeded in rescuing some of these doctors, sending them fully equipped to China, and paying them a living wage. Readers of this *Journal* will perhaps remember that appeals were made in its columns. At the same time a Norwegian committee was working on the same lines, and altogether nineteen men were sent out. They settled down well, learnt the language, and did excellent work in conditions difficult and unhealthy. With the fall of Norway the English committee took on the care of the whole nineteen, and with increasing trouble in remitting money the responsibility became onerous. Then the United (now British United) Aid to China Fund was established and, though the committee retained its identity, its resources and collections were pooled with the Fund, which took over its responsibilities and, with its better organization, was able to help the men more effectively. With the defeat of Japan the problem of repatriation arose, for that was still the moral responsibility of the committee. This proved almost insuperable, passages, visas, passports presenting endless obstacles, for the men comprised Poles, Czechs, Austrians, and Germans. Fortunately seven had been adopted by the American-Chinese Army in Burma, and when hostilities ceased the Americans shipped them to Europe and they reached their native lands.

One of the team had found employment for himself, but eleven still remained. Then came the news that U.N.R.R.A. had enrolled them in its organization, and better helpers could hardly be found. The wanderings of our colleagues seem to be coming to an end, and the committee has perhaps saved their lives, for if left in the concentration camp the overrunning of France would surely have been the end of them. So it was with some self-satisfaction that on Feb. 13 the committee held its final meeting. The members made a presentation to Dr. Mary Gilchrist, the honorary secretary, who had shouldered most of the work of all these troubled years. The British Aid to China organization was thanked for the help given when it was most needed, and it was hoped that it would continue to receive that support from the committee's old subscribers.

MEDICAL SOCIETY OF LONDON DINNER

The 166th anniversary dinner of the Medical Society of London was held at Claridge's Hotel on March 8 after an enforced interval of seven years. The President, Sir James Walton, took the chair and the company included Lord Moran, P.R.C.P., Sir Alfred Webb-Johnson, P.R.C.S., Surg. Rear-Admiral Sir Gordon Gordon-Taylor, President of the Royal Society of Medicine; Air Vice-Marshals Sir William Tyrrell and Sir Stanford Cade, Major-Gen. W. Brooke Purdon, Sir Henry Tidy, Dr. R. A. Young, Dr. Anthony Feiling, Sir Russell Wilkinson, Sir Philip Manson-Bahr, Mr. Lionel Colledge, Dr. A. Hope Gosse, Dr. H. E. A. Boldero, Mr. Zachary Cope, Mr. J. Johnston Abraham (biographer of Lettsom, the founder), Mr. E. W. Riches; Dr. Horace Evans and Mr. A. Dickson Wright (joint honorary secretaries); and the editors of the *Lancet* and the *British Medical Journal*. After the loyal toasts had been honoured the health of the Society was proposed by the guest of honour, Sir Alan Herbert, M.P., in a witty speech. The presence of ladies for the first time in the long history of the Society lured him into Parliamentary digressions, though he proclaimed more than once that he would keep off politics. He said that doctors were the most deserving of the human race and he was all in favour of them; like authors, they were in effect one-man businesses and should be protected. He looked forward to the future of the medical profession with some misgiving and felt little hope that anything to help it would happen in Parliament, though he would do his best when the National Health Service Bill was debated. He advised doctors to be careful of his friend Aneurin Bevan, who was unscrupulous in his means though his ends might be splendid; they should use a long spoon when supping with him. He himself felt it was wrong of the Minister to let the doctors know in private that he was going to cut off their heads and at the same time demand that nothing of this should be said beforehand in public. Sir Alan ended with a word of personal affection for the London Hospital and for Sir James Walton. The President, in reply, said that in spite of the war the Medical Society of London had remained active, largely thanks to Dr. Hope Gosse, and had suffered a very small loss in net membership, though 76 members had died during the past seven years. Material damage had been small and was now repaired, and the library had returned intact to the house in Chandos Street. He believed that the medical profession could, and should, take a large part in shaping the future of the public health services—but in an advisory capacity, retaining the trust of the public, and (because it had no political bias) acquiring the trust of the Government. Doctors feared lay bureaucratic control and wanted to preserve that sense of individual responsibility from which the civil servant shrank. Medical and surgical advances were due to aggregation of small individual contributions by many men, who reported and discussed them at meetings of societies when knowledge was in the making. Sir James felt that there was a great opening for clinical observations, especially by general practitioners. "By such means in our short lives we can attain immortality."

Nova et Vetera

ISLAM AND MEDICINE

With the object in view of showing that the end of the war affords an excellent opportunity for international co-operation and that in the organization of peace the Islamic world is likely to be a strong stabilizing factor, H.H. the Aga Khan and Dr. Zaki Ali have written a survey of the fundamentals of Islam.[1] The greater part of this small book is devoted to proving how Islam had always encouraged the pursuit of medical science. This remarkable movement began in the eighth century and for the next 500 years the Muslims alone, following the precepts of the Koran, played a vital part in the evolution of humanity. They resuscitated Greek medicine by translating Galen's *Anatomy*. Hunayn ibn Ishaq was the author of an original work on eye diseases, and Abul Qasim, who wrote a medical encyclopaedia of thirty volumes, was credited with being an outstanding oral surgeon.

To early Arab chemists Europe owes its knowledge of corrosive sublimate, arsenious acid, silver nitrate, and many other preparations. They also investigated the existence of impalpable air-borne bodies. To them Europe owes the discovery of alcohol: even organotherapy was not unknown to them. With regard to physiology Ala ad Din (A.D. 1210–1288) described the pulmonary circulation, three centuries before Michel Servet. Perhaps the most illustrious investigator the East has ever produced was Avicenna, born near Bokhara in A.D. 980. He was the author of a textbook which included all the branches then known to medical science and which remained the chief medical classic for 600 years. He systematized psychology and recognized the value of psychotherapy. In helminthology he brought *Dracuncula medinensis* and *Ankylostoma* to notice, and differentiated between gonorrhoea and syphilis. In the domain of surgery Avicenna described tracheotomy, as also symptoms of pyloric stenosis and gastric ulcer. He wrote a remarkable dissertation on diseases of the liver and gall-bladder. Among other Muslim scientists mention is made of Ali al Hussan, who made researches in optics with special reference to refraction.

There were women physicians in the East and in Muslim Spain, who graduated after long and practical courses in obstetrics and gynaecology. The foundation of well-equipped hospitals was a striking feature of Muslim civilization. Clinic rooms, lecture halls, and medical libraries were provided. After students passed their examinations a diploma was given, so that the practice of the profession was confined to those who had undergone proper training.

Dr. Zaki Ali's studies are concerned with the period from the ninth to the end of the fourteenth centuries, and in his documented story he has effectively shown the debt we owe to the glorious period of Muslim medical renaissance, which gave a strong impetus to Europe and led to a fruitful quickening of the spirit of scientific investigation in the West. It was an era which paved the way to modern civilization.

SIR THOMAS ELYOT (? 1490–1546)

On March 20, 400 years ago, there died a disappointed man, one of the more remarkable personalities in English medicine. His dreams had faded and his ambitions had turned to nought. The figure of Sir Thomas Elyot (his likeness is preserved in Holbein's drawing at Windsor) strangely stirs the imagination. Yet with the passage of the centuries we drift increasingly away from the actual man. Traditionally M.D. of Oxford. Traditionally the first medical man to receive a knighthood. A classical scholar who provoked the vociferous wrath of the medical profession when in 1534 he published in English a popular guide to medicine, *The Castel of Health*. This, incidentally, is a fascinating and touching autobiography, for it reveals the many diseases which plagued its author for so many years. His "Boke named the Governour" (1531) is described as the first English treatise on ethics. Though Sir Thomas Elyot served on two occasions as ambassador to the Court of the Emperor Charles V, it would be an extravagance to style him truant from medicine, having regard to the mystery which cloaks his medical career.

W. R. B.

[1] *Glimpses of Islam*. By Prince Aga Khan and Dr. Zaki Ali. (Pp. 72.) Geneva: printed by *La Tribune de Genève*.

Reports of Societies

INFECTIOUS DISEASE CONTROL IN U.S.A.

At a meeting of the Fevers Group of the Society of Medical Officers of Health on Feb. 1, with Dr. M. MITMAN in the chair, Dr. ROBERT CRUICKSHANK, Director of the Central Laboratory of the Public Health Laboratory Service, talked on his "Impressions on the Control of Infectious Diseases in America."

Dr. Cruickshank remarked on the preoccupation in America with the infective neuropathies, such as the various forms of encephalitis and poliomyelitis. Rabies was a common infection among dogs and rabies vaccine was used extensively, although there was some doubt about its prophylactic value. Team work was usual in research in the laboratory, in the hospital, and in the field.

Diarrhoea and Dysentery

In the south-western States of the U.S.A. the death rate from diarrhoeal diseases was high; for example, the annual figure for San Antonio, Texas, was 200 deaths per 100,000 population. The bulk of these were due to infections with the dysentery and Salmonella organisms; as in Britain many cases of acute diarrhoea were not reported to the health authorities. He gave an account of the epidemiological studies of Hardy and Watt, based on some 1,600 cases of diarrhoea and examinations from 850 households totalling some 8,000 faecal cultures. Infection was most prevalent among children aged 1 to 9 years and most severe in children under 2 years of age. In older children about one-half of those infected showed clinical signs. In adults the ratio was 1 in 4 or 5. In a survey of 380 cases which yielded positive stool cultures less than 10% had diarrhoea: one-quarter were convalescent carriers and the rest were healthy contact carriers. The infection in America was rarely water- or milk-borne. Food-borne outbreaks occurred in institutions; flies were not, apparently, important vectors; in most instances spread of infection was direct, person to person, facilitated by low standards of personal hygiene.

Sulphadiazine was used extensively and successfully for Flexner infections; in Sonne infections both soluble and insoluble sulphonamides were less successful. Sulphadiazine had also been used prophylactically for the control of dysentery in institutions, but there was a danger of establishing drug-fast strains. Streptomycin had produced rapid clinical and bacteriological cure in cases and carriers infected with sulphonamide-resistant Flexner bacilli.

There was considerable interest in methods for improving food and restaurant hygiene, and Dr. Cruickshank referred to the main faults and the ways in which they were being corrected. Education of the food-handler was a most important factor in the control of infection.

Gastro-enteritis did not seem to be such a serious problem as it is in this country. Neonatal diarrhoea with a mortality of over 30% was attracting a good deal of attention. A virus had been isolated from infants suffering from stomatitis and diarrhoea, but the clinical course of this disease was unlike the gastro-enteritis prevalent in this country.

Respiratory Infections

Acute respiratory infections could be classified in two groups: (A) Those not controllable by prophylactic vaccination: (1) upper respiratory infections, including the common cold, catarrhal fever, and primary atypical pneumonia; (2) measles, mumps, and chicken-pox; and (3) streptococcal infections. (B) Those in which artificial immunization gave reasonable hope of control: diphtheria and smallpox, probably pertussis, and possibly influenza and pneumococcal pneumonia.

Attempts were being made to separate out the hotch-potch of upper respiratory infections and to control their spread in hospitals, particularly by the use of barriers of ultra-violet light. In schools ultra-violet light had given some success in controlling the spread of the common childhood fevers, such as measles, mumps, and chicken-pox. Progress was being made in the practical application of aerial antiseptics.

Streptococcal infections had been very troublesome in Army training camps, and were particularly common in New England

and in the uplands of the Western States. They were followed by a high incidence of rheumatic fever. Recent work had suggested that heavy nasal carriers were important reservoirs for the spread of streptococcal infections, and as they might show no obvious stigmata of infection these carriers should be sought out by routine swabbing. Oiling of floors and bed-linen had given good results in the control of streptococcal infection.

Controlled field trials of vaccine action against pertussis were going on in a number of States, and good results were being obtained with three spaced doses of plain or alum-precipitated pertussis vaccine. Antibody tests and agglutinogen skin reactions were being used as indices of the immunity produced by pertussis antigen. A mouse test had recently been introduced which might prove very useful in assessing the relative antigenic potency of different pertussis vaccines.

General Discussion

Dr. HARRIES (L.C.C.) asked about the present position of gamma globulin in measles treatment and prophylaxis in America. Dr. Cruickshank replied that gamma globulin was too depressant to be given intravenously for the treatment of measles; its value in measles prophylaxis had been in line with experience here. It had been confirmed that prophylactic gamma globulin would prevent infective hepatitis.

Dr. W. GUNN (L.C.C.) asked the lecturer about streptomycin. In addition to information about its pharmacology, Dr. Cruickshank gave details illustrating the valuable therapeutic properties of streptomycin in influenzal meningitis. It has also given promising results in experimental tuberculosis, and in certain human cases of progressive tuberculosis. American supplies were still under Government control and the cost of production was very high, but a number of firms were now making streptomycin on a commercial scale and there were indications that, in addition to its possible use in tuberculosis, it would act as a complementary chemotherapeutic substance to penicillin.

Dr. M. MITMAN said the space allowed in catering establishments for the preparation of food was usually totally inadequate; he had good authority for stating that it should comprise one-third of the total floor space. Architects were interested chiefly in designing the restaurant, lounges, and bars, and few of them were competent to plan kitchens. The Americans were ahead of us in providing refrigerator space. Incubation after food contamination was an important factor in food-poisoning, and refrigeration prevented it. Dorling's case (*Lancet*, 1942, **1**, 382) was an excellent example of such incubation. A woman of 61 living alone opened a tin of wholesome soup and in so doing contaminated it with staphylococci from her septic thumb; she consumed half the soup without ill effect and left the rest in her warm kitchen for seven days. She then rewarmed the remaining half and consumed it; within three hours she was violently ill with food-poisoning, and within twenty-four hours she was dead.

Nasal carriers were important disseminators of infection, not only of diphtheria bacilli and streptococci, but also of pathogenic staphylococci. From his bacteriological examinations of the nose in septic cutaneous conditions, including furunculosis, he was satisfied that many of the skin lesions were auto-infections from the nose and were not attributable to the general health of the patient. The carrying of staphylococci in the nose was common, and the frequency with which the hands of normal people strayed to their noses was surprising. For the treatment of intestinal infections he preferred to combine an unabsorbable sulphonamide—sulphasuxidine—with an absorbable one, such as sulphamezathine or sulphadiazine.

PSYCHIATRIC PROBLEMS OF REPATRIATED PRISONERS

A meeting of the Section of Psychiatry of the Royal Society of Medicine on Feb. 12, with Dr. G. W. B. JAMES in the chair, was devoted to some psychiatric problems of repatriated prisoners of war.

Dr. MAXWELL JONES gave an account of work, in collaboration with Dr. Tanner, at the special unit at Dartford, where 829 prisoners of war had been treated. A special investigation was carried out between June and September, 1945, every fifth admission—100 patients in all—being studied according to a rather elaborate standard formula. Family and personal history, home atmosphere, social circumstances, schooling and work record, marriage, range of interests, personality type, intelligence and physique were all taken into account. An assessment was made of the stresses to which the individual was subject before his Army service and of his reactions thereto. He was examined in relation to his Army adjustment, domestic worries, experiences in prisoner-of-war camps, and his re-adjustment on returning to his home and unit. The results of the investigation brought out the normality of the group, which was the more striking to the investigators who had been accustomed to deal with a neurotic population. Of recent severe stresses, 58% mentioned poor food, 30% stress on active service, 26% Allied bombing while in prison camp, and 24% conditions on the marches at the beginning and end of captivity; 88% stated that sex was no real problem; 82% that enemy propaganda had no effect; and 58% that they had not been subjected to any unreasonable degree of punishment or cruelty.

The most common symptoms encountered were breathlessness, tremor, a feeling of "not belonging," shyness in the presence of women, resentment towards the Army, fatigability, and lessened tolerance. The low-rated symptoms were also of interest: fear of impotence or actual impotence and of loss of family affection, battle dreams, weeping, pain on breathing, and diarrhoea and vomiting. In no single case was hysteria a major manifestation. While it was premature to draw final conclusions, all the evidence pointed in one direction—namely, that these patients, although they differed from the normal population, were not neurotic. In response to standard exercises their oxygen intake was similar to that of normal controls, pulse response was normal, and the results of treatment were rapid.

In the treatment programme at Dartford particular attention was paid to the resolution of social difficulties. The unit was fortunate in obtaining the co-operation of between forty and fifty local employers, ranging from small family businesses to large factories. The advantages of infiltration into a normal population were obvious. Various group activities, such as educational and entertainment programmes, were undertaken. Out of the 829 patients, 107 resided in and around London, and it was arranged that these should be followed up. To date 56 patients who had been discharged from hospital for three months or more had been visited, and a relative had been interviewed in every case. Only 4 men had done no work whatever, and 16 had taken more than eight weeks' rest before starting work; others started work almost immediately after leaving hospital. The average number of weeks worked in this group was nearly 13, and the average number of days off work on account of illness was 6, this figure having been increased by a slight influenza epidemic. Of the patients 20 had sought medical advice for nervous symptoms; 8 stated that they were completely symptom-free. In 47 cases the relative said that they had been greatly improved by hospital treatment. In 51 cases no change of employment had occurred; only 4 were in Government training schemes. In the unit the factors most beneficial, according to the patients, were the work therapy, the general social organization, and the quietness of the place. There was a resident disablement rehabilitation officer, who had been invaluable in helping those discharged.

Work of Civil Resettlement Units

Lieut.-Col. A. T. M. WILSON said that in 1941 attention began to be directed to this problem, and more recently units had been set up for dealing with repatriated prisoners of war. The men who went to these civil resettlement units, as they were called, did so as volunteers, and the degree of collaboration was more than had been anticipated. Had it not been forthcoming it would have been impossible to have overcome the suspicion of the men concerning the Army and its intentions. Although ex-prisoners of war had certain special difficulties, their problems were not greatly different from those of other repatriated Service men. The resumption of social relations, particularly within the family, made severe demands not only on the returning father but on his wife and children, who had problems of their own. Resettlement was a two-way affair, calling for mutual adjustments, whether considered in terms of family, place of work, or community as a whole.

He described the staff of a civil resettlement unit, with its specialist and vocational officers, Ministry of Labour and Red

Cross liaison officers, professional women social workers, and others, all helping the men to replace the control of military life by control suitable to civil conditions. No man was ordered to "see" anyone. When men were backward in making use of facilities it was regarded as a psychiatric problem. As yet no adequate information was available as to the permanent results of four or five weeks spent in such a centre, but such information as could be gathered from social agencies, the Ministry of Labour, employers, and the men themselves and their families was encouraging. The men had realized that the Army had taken well-informed social action in relation to their problem.

In the course of some further discussion a number of officers attached to civil resettlement units contributed their experiences. Major DOYLE, the first psychiatrist to be appointed to a civil resettlement unit, said that the most vexing problem was the small non-cooperative group, who were flagrantly antisocial, and with regard to whom it seemed that expulsion was the only solution. This group was tackled by individual interviews and collective discussions. The men were told that, although there was no punishment in the unit, others were affected by their behaviour, and that they were up against their community. This approach was effective, and one by one they gave an assurance that there would be no further trouble, and the rest of the unit became not only more tolerant but even protective towards this neurotic group. The demand for psychiatric help in the unit rose from 5% of the cases at the beginning to 60% after three or four months. Major KILNER also said that the requests to see the psychiatrist were increasing. Every man consulting the psychiatrist was seen once or twice, the nature of his symptoms was explained to him, and he was made to feel that his individuality was respected. "Therapeutic discussions" were held every week, the themes selected by the group itself, and the psychiatrist, once the discussion was in full swing, receded into the background, choosing the right moment for explanation and interpretation. The therapeutic side of the civil resettlement unit was represented not only by the psychiatrist but by the vocational and other officers Brig. BARBER described the arrangements for the repatriation of prisoners from Germany. The thing which had struck the officers in charge, he said, was the extent to which the recently repatriated prisoner resembled the institutional child newly let loose on the outside world. Many had neurotic symptoms, but gross phenomena were extremely rare.

A medical officer of one of the European Allied armies who had been in a prisoner-of-war camp said that the investigation of a sample of 250 cases had shown that the incidence of neurosis rose with length of captivity and jumped significantly between the second and third years. After two years there seemed to come a breaking-point in the prisoner of war's power of adaptation. Chronic anxiety states increased relatively as well as absolutely with length of captivity. The most marked symptoms were headache, loss of power of concentration, and insomnia. Among the anxiety states, however, there was an absence in his group of "barbed wire phobia," and the four cases of claustrophobia did not arise out of the incarceration. There was no instance of fear of impotence or sterility.

The PRESIDENT said that not only in prisoners of war but in fighting men generally the critical period was after two years.

NEONATAL INFECTIONS

At a meeting of the Section of Disease in Children of the Royal Society of Medicine on Feb. 22, Prof. NORMAN CAPON presiding, the subject of discussion was neonatal infections.

Dr. BERYL CORNER gave an analysis of infections among 6,500 infants, consecutive live births in two maternity units in Bristol. The infections included the smallest manifestations, such as a spot on the skin. In one of the hospitals, with just over fifty beds, devoted entirely to maternity work, the number of infants who showed some infection during the period under review was 869, or 25.3%. More than one infection—for example, conjunctivitis and thrush—was shown in 83, and more than two infections in 8. There were three deaths, all from bronchopneumonia. The number of superficial skin lesions, cases with only a single lesion being included, was 198; eye infections numbered 451, among which only 89 occurred during the first five days of life. In the second hospital the number of infected infants was 949, or 29.7%. More than one infection was shown by 129, and more than two infections by 33. Here deaths from infection—bronchopneumonia or gastro-enteritis—numbered 12. Eye infections totalled 563, and mouth infections 61, some of these being severe enough to cause constitutional symptoms.

From these figures, said Dr. Corner, it was obvious that prevention of infection was a major problem in a maternity department. In the first hospital, which had rather better figures, a serious effort was made three or four years ago to reduce infant infections, particularly those of the skin. As long as pustules on a newborn infant's skin were dismissed lightly as a few septic spots and were not treated with the importance they deserved, so long would serious staphylococcal infections arise in the nursery. The importance of apparently trivial infections could best be brought home to the nursing staff by keeping careful records.

It was important to devote attention to the kind of nursing staff required for the care of the newborn baby in hospital. The idea was tenaciously held that mother and baby were an inseparable unit and that the same nurse should care for both. That was the ideal in the days of private domiciliary midwifery, but in these days of large-scale institutional midwifery, with the 48-hour working week for nurses, and allowing for the large number of lectures to be attended by the pupil-midwife, it was an ideal which could not be reached. In the second of her hospitals, which was a teaching hospital, the nurses spent only 40 hours a week attending their patients, which meant that each mother and child must be attended by 4 1/5 nurses. The most practical solution to the problem was the nursing of the baby by a completely separate nursing staff. This had the advantages that the nurses' whole attention was focused on the baby and minor lesions were readily observed, that the baby need never be left alone in the nursery, that the baby's routine was undisturbed by maternal emergencies, that the carrying of infection from mothers to babies was largely eliminated, and that all types of nurses apart from the midwife or pupil-midwife could be used for routine nursery work.

In the treatment of infection barrier-nursing was the first point. This was carried out not only for infants actually infected but for infants whose mothers had any infection. The nursery sister should be given power to start treating small lesions as soon as she saw them. Cases of pemphigus had been arrested because the nursing staff had been allowed to start treating the first few spots they had seen. For application to skin lesions 5% sulphathiazole in glycerin had been used at three-hourly intervals, and in the majority of cases this would clear up septic spots in two, three, or four days. Penicillin cream, used in 33 more serious cases, seemed to have an advantage. Twelve cases of pneumonia had been treated with penicillin, with three deaths, all in premature infants. She urged that paediatricians should concentrate on improvements in nursing routine and technique in order to reduce the still unduly high neonatal morbidity.

The Ophthalmic Aspect

Prof. ARNOLD SORSBY dwelt upon the importance of the ophthalmic aspect in sepsis in newborn children. Most of these infections of the eye developed after five or six days of life. That did not fit in with the classical conception of ophthalmia neonatorum in the newborn. One of the difficulties was a merely verbal one. The unfortunate term "sticky eye" represented the line of demarcation between the normal eye and ophthalmia neonatorum—it meant the slightly irritated or inflamed eye. The rate of blindness among school-children went down from 36.4 per 100,000 in 1923 to 26 in 1933 and 20 in 1943. In 1922 37% of all blind children were blind as the result of congenital anomalies of the eye; twenty years later this proportion had increased to 67%, meaning, of course, not an actual increase in congenital anomalies but a relative decline in infective conditions as the cause of blindness. It would be a mistake to assume that these congenital anomalies were all genetic affections; at least a quarter of them were due to a transmitted infection like congenital syphilis. It was also well known that German measles in the mother was responsible for a certain amount of

blindness in the children, producing congenital cataract and extensive fundus lesions. The incidence of blindness and impaired vision resulting from ophthalmia neonatorum had gone down markedly during the last twenty years, but there was no evidence of any reduction in the amount of ophthalmia neonatorum itself. What had happened was that as a result of intensive effort the complications of ophthalmia neonatorum had been brought under control. The most significant of the measures was notification. In some countries silver nitrate prophylaxis was compulsory. In Scotland, while not exactly compulsory, it was very widely carried out. In England and Wales it was carried out in some places and in others ignored. There was no real evidence that instillation of a drop of antiseptic prevented the onset of ophthalmia neonatorum. The complications of ophthalmia neonatorum had been steadily declining for many years before the advent of silver nitrate; silver nitrate and penicillin had accelerated what was already occurring. The value of sulphonamides was, of course, undoubted, and they should be used as a routine measure, save in the specialized units where penicillin could be used. His experience of penicillin in ophthalmia neonatorum extended to 150 cases. It must be used in relatively strong concentration and with great frequency. It was easy enough to get a cure with penicillin, but no one yet could say how it could be used in a simple and effective method.

Nursing Routine

Dr. HELEN MACKAY was doubtful about the wisdom of the policy of nursing the babies apart from their mothers. It was important to guard the babies against maternal infection, but it was also important to teach the mothers to tend their babies before they went out of the maternity home, also to get unmotherly mothers interested in their babies as quickly as possible. The balance of advantage might be to keep the baby with the mother. Dr. C. E. FIELD said that about a year ago in her hospital there was a small epidemic of skin infection in one nursery, and the prophylactic bathing of the babies with penicillin cream was tried and gave good results as compared with controls. The PRESIDENT said that babies were bathed too often. One well-known paediatrician insisted that the baby should be bathed once at birth, and then not again until the cord came away, and that procedure had resulted in a material reduction of infections.

Dr. CORNER, in reply, said that the ideal thing was to nurse the baby with the mother if the latter was fit, but so many of the mothers came into hospital with all kinds of infections, and the records of her hospital showed definitely that a little crop of infant infections coincided with infections of the same kind in mothers who were being nursed in the same wing. As for bathing, it was the practice in her hospital to bathe the babies at birth and then on the fourth day. If the cord was not separated they were not actually immersed. After this they were bathed every day. It was possible that the bathing took place too often, but the routine of bathing—the complete undressing of the infant—was a means of drawing attention to any lesion that might otherwise remain undisclosed.

A meeting of the Medical Society of the L.C.C. Service was held at the Maudsley Hospital, Denmark Hill, S.E., on Feb. 7, when 115 members were present. Members of the staff of Maudsley Hospital demonstrated the methods and appliances used in present-day psychology, and showed films of "The Physical Treatment of Neurotic States" and "Neuropsychiatry," and demonstrated cases of prefrontal leucotomy, anxiety state, G.P.I. treated with penicillin, and exophthalmic ophthalmoplegia.

The Washington Institute of Medicine (1720 M Street, N.W., Washington, D.C.) announce the following publication of two new periodicals. The *Quarterly Review of Psychiatry and Neurology*, with Prof. Winfred Overholser, M.D., as editor-in-chief, is to appear in January, April, July, and October of each year. The *Quarterly Review of Urology*, with Dr. Hugh J. Jewett, of Johns Hopkins University, as editor-in-chief, is designed to present concisely not only all progress in the field of urology but also important developments in other branches of medicine which are, or may become, of urological significance. It is to be published in March, June, September, and December. The annual subscription to each review is $9.00.

Correspondence

Making Meaning Clear

SIR,—One of the advances in modern therapeutics has been the introduction of methods for determining the concentration of drugs in the blood stream. Such methods greatly accelerated the application of the sulphonamides and the new antimalarials. Unfortunately, in the case of salicylates and penicillin the established convention of reporting biochemical data in terms of 100 ml. of blood has been disregarded, and results are given in terms of microgrammes or decimals of units per ml. This is all very confusing, for most of us would find it much easier to remember the therapeutic range of penicillin as 4 to 20 units per 100 ml. than as 0.04 to 0.2 unit per ml. Part of the art of writing is to remove unnecessary obstacles from the way of the reader, and it is therefore to be hoped that editors will persuade contributors to revert to the normal custom.—I am, etc.,

Oxford. L. J. WITTS.

Words and Clear Thinking

SIR,—I feel it is time Dr. Geoffrey Bourne's words under this heading (*Journal*, Oct. 21, 1944, p. 543) were reiterated: "*Clear thinking is largely determined by clear expression. Those who misuse words are enemies to science.*" He enumerates the reasons for abandoning the terms "hyperglycaemic coma" and "hypoglycaemic coma." Others have joined him: "Why hyperbaric and hypobaric?" asks Lieut.-Col. H. Williamson (Sept. 15, 1945), recommending the safer synonyms "heavy" and "light." Your own leading article, "Drugs and the Doctor" (Oct. 21, 1944), describes proprietary names of drugs as "a problem," instancing sulphanilamide, offered under fifty-odd names at the last time of recording. Dr. A. Piney (Dec. 15, 1945) looks forward to a meeting of haematologists to clarify "the unwieldy terminology of their subject."

After reading these heartening contributions it is disappointing to see Dr. W. J. Gardner (Feb. 9, 1946) disparage the "myringotomy or paracentesis?" discussion so well introduced by Mr. T. B. Jobson (Jan. 5). He may be disgusted at one of the words later suggested, but his contempt of this type of correspondence is mischievous if our vocabulary is to undergo any improvement. It is also very disturbing to see your reviewer of the new supplement to the *B.P.C.* (Dec. 15, 1945) waiting for the day, which he thinks "will surely come," when that impartial publication shall burden its pages with a multitude of terms invented at random by private firms.

Medical terminology invites reform in several directions. I believe it was H. G. Wells who said (long ago) that scientists have yet to learn what every novelist knows—that is, that different characters in the same plot should not have similar names. Yet the "hypers" and "hypos," "ads" and "abs" remain, to our constant confusion and danger. The annoyance is worse when we see all the contrasting terms the drug houses can produce for a single substance.

A third obstacle to clear thinking, the least necessary of all, arises when we mix the meaning of such good words as we possess. An example has appeared in your columns at the time of writing. Dr. Gaskell (Feb. 16) defends a previous letter by quoting a well-known textbook in which the dilute plasma at the top of the E.S.R. tube is called "serum" fourteen times in three pages. This, he says, is good enough for him. Surely, at a time when perhaps hundreds of bottles of dried plasma and dried serum are issued weekly by the transfusion services, it would be more reasonable to recognize the difference between these substances and refrain from using their names interchangeably. It is not enough that the authors of the textbook are clear in their own minds about the matter, or that readers "know what they mean." They have confused Dr. Gaskell and will confuse others. (Dr. Gaskell will see his other troubles explained in an article such as that in the *Journal* of Sept. 5, 1942, p. 278.)—I am, etc.,

Brocket Hall Hospital, Welwyn. T. C. BEARD.

Fractured Patella

SIR,—Mr. R. Brooke (Feb. 16, p. 231) has not convinced me that the patella is a useless bone which may be sacrificed with impunity. I believe that it serves a useful purpose and that when it is broken it should be mended and so far as possible restored to its normal condition. As Sir Max Page (March 2, p. 329) has pointed out, loss of the patella gives an ugly flattened knee, while the functional results of excision are often very imperfect.

On the other hand, it must be admitted that the results of suture are not always perfect, and the reason is that suture or "wiring" alone, however competently done, is a mechanically inefficient method of uniting a transverse fracture. In fact, it is bad carpentry. Frequently the result looks perfect on the operating table, but the *x*-ray photographs taken a few days later show tilting of the fragments and partial separation of the fracture surfaces. This applies both to the transverse fracture of the patella and to the common fracture of the olecranon.

For some years I have used a combination of pegging and wiring for these fractures. The fracture surfaces are cleaned and fitted most accurately together. They are firmly held together while first a drill and then a bone peg is passed into the long axis of the bone. A malleable stainless-steel wire is then passed transversely through the fragments above and below the fracture, and it is drawn tight and twisted in the usual way. The peg prevents any tilting of the fragments, while the wire holds them together.

In the case of the olecranon a long central screw is good carpentry if it will hold. But neither a screw nor a peg can be relied on to hold in the soft cancellous tissue of the shaft of the ulna, so that combined pegging and wiring is better.—I am, etc.,

London, W.1. A. S. BLUNDELL BANKART.

Suprapubic Drainage of the Bladder

SIR,—Mr. E. W. Sheaf (March 2, p. 331) is wise to draw attention to the dangers of suprapubic cystotomy by a blind operation. An experienced surgeon can make the same mistake as Mr. Sheaf's "competent house-surgeon," for how will he be sure of avoiding the peritoneum in the region of the upper half of the anterior wall of the bladder without seeing or feeling the latter? The anatomical arrangement of the peritoneum is not the same in every case. I have observed a fold of it lying in front of a part of the anterior wall of an over-distended bladder on more than one occasion. Mr. Sheaf's experience with damaged gut is unfortunately not unique. I have had to operate on a patient in whom the tube had been inserted by blind puncture through the lumen of a piece of small gut before entering the bladder. As in Mr. Sheaf's case the intestine was still further damaged when the suprapubic sinus was dissected preliminary to opening the bladder for prostatectomy. The operation was made more difficult by the mass of peritoneal adhesions. Another case in which similar adhesions had sealed off the tube from the coelom had fortunately left the gut undamaged. I agree with Mr. Sheaf that in performing suprapubic drainage the catheter should be introduced into the bladder under vision. Apart from this, Mr. E. W. Riches's technique is to be commended.—I am, etc.,

London, W.1. CLIFFORD MORSON.

SIR,—I should like to reply to Mr. E. W. Sheaf's letter (March 2, p. 331), as that part of the article to which he refers was my responsibility. Although the method of suprapubic catheterization described was originally devised for the treatment of bladder paralysis (*Lancet*, 1943, **2**, 128; *Brit. J. Surg.*, 1943, **31**, 135), I have used it extensively for cases of retention in prostatic obstruction, and it is my routine treatment for chronic retention due to this cause. The very competent house-surgeon to whom he refers was also very enterprising in adopting the same method, although the propriety of any house-surgeon performing solely from the book an operation in which he has not had practical instruction may be questioned. The level of the puncture must obviously depend on the degree of bladder distension, and the instructions cited by Mr. Sheaf were given in an attempt to avoid the low suprapubic fistula which has been and still is, unfortunately, too common. If the bladder is adequately distended and an oblique track is made the danger of puncturing the peritoneum is minimal; I have seen it only twice in some hundreds of cases, and each time it was recognized and corrected without harm at the time of the subsequent prostatectomy. Anatomists have stated that a bladder containing three-quarters of a pint (425 ml.) of fluid comes into contact with the abdominal wall for a distance of about 3 inches (7.5 cm.) above the symphysis pubis (Appleton, A. B., Hamilton, W. J., and Tchaperoff, I. C. C., 1938, *Surface and Radiological Anatomy*, Cambridge, p. 185), and this can readily be verified by surgical observation. Mr. Sheaf's suggestion that the puncture must usually traverse free peritoneum is at complete variance with the facts. Nor must he expect to find the bladder adherent to the anterior abdominal wall below the fistula; the avoidance of an open operation at the first stage leaves the field free of any adhesions or scar tissue at the second, and makes the exposure equal to that obtained at a one-stage prostatectomy. When preliminary drainage has been prolonged—in his case it was ten weeks—it is to be expected that a pouch of peritoneum will come down on either side of the track of the catheter, and it is therefore wiser to expose the anterior surface of the bladder at the second operation and open it below the fistula, stripping up the peritoneum and keeping strictly to the midline, just as in a one-stage operation. The accident of opening the intestine can thus be avoided.

While one must sympathize that his Christmas Day was marred by having to operate for intestinal obstruction, one must congratulate him on the successful outcome of his treatment and express the hope that this incident will not prevent his giving the method a fair trial in suitable cases; I can assure him that its advantages greatly outweigh any defects it may have.—I am, etc.,

London, W.1. E. W. RICHES.

Psychology of the One-eyed Man and his Position in Industry

SIR,—The article on this subject by Lady Duke-Elder and Dr. E. Wittkower (Feb. 2, p. 155) has given us a timely reminder of this important problem. The eye injuries of this war and the ever-recurring eye injuries in industry are adding thousands to the present mass of one-eyed people. What is the position of the one-eyed men and women in the labour market? What jobs should they take up?

In the course of my investigations in 1938 on the employment of the one-eyed worker in industry I asked the Industrial Welfare Society to send out a questionary to its 750 member firms. This questionary asked for information about the employment of one-eyed men and women, their efficiency at work, and their accident record. Replies were received from 398 firms which employed about 1,000,000 workers. In these replies I learned that one-eyed men and women are employed in mines, iron and steel works, in the manufacture of chemical and electrical goods, and also in the fine close work necessary in the manufacture of artificial silk yarn, woollen goods, etc.

One-eyed people can be divided into two groups: (1) those who have lost an eye since childhood; and (2) those who have lost the vision of one eye in adult life as a result of disease or injury. The first group are in no way handicapped and have full confidence in carrying out their work. One finds the men in this group employed in the building trades working on ladders, on scaffolding, roofs, etc.; in the engineering trades working on every type of machine; in the tool-making industry, where great precision is required; and doing clerical work in offices. They are just as quick and efficient as their fellow men who work with both eyes. In the labour market these men and women have suffered few disadvantages until now. In recent years many large industrial establishments have instituted pre-employment visual examinations. It is obvious, therefore, that this group of one-eyed people will in future find greater difficulty in the selection of trades and professions.

The second group of one-eyed workers comprises those who have lost an eye in adult life. For the purpose of this investigation in 1938 I examined 100 men and women who had lost an eye within the previous eight years. They were patients at the Royal Eye Hospital, London, where the investigation was carried out. An inquiry was then made into the following points: (1) Trade and occupation when the accident to the eye occurred. (2) Time taken for readjustment to monocular

vision. (3) Period of enforced absence from work. (4) The subsequent employment of the injured worker. After the excision of an eye the patient takes a little time to adjust himself to the new visual conditions. The usual errors in the estimation of distances are made by all during the first few weeks following the loss of an eye. The period of the new visual adjustment takes from a few weeks to some months. Young workmen adjust themselves to the new visual conditions much more quickly than older people, who take longer to regain their confidence and remain nervous and anxious, especially when negotiating traffic in busy roads. The loss of the master (dominant) eye produces greater disability and delays adjustment to monocular vision. In assessing the loss of working capacity in a person who has lost the vision of one eye it is important to ascertain whether the injured eye was the master.

The Period of Enforced Absence from Work.—Convalescence after the removal of an eye together with the time necessary for the patient to regain confidence to return to work should rarely exceed two to three months, and yet I found during my investigation that the greater number of men, after the loss of an eye, stayed away from work for periods varying from six to nine or even ten months. A number of factors are responsible for this delay in the return to work. (1) Fear and lack of confidence to work under the new visual conditions. This may be a very important factor and cause the man to stay away for several months. Patients suffer from a genuine fear of injury to the other eye if and when they return to work. Their limitations in the field of vision and the mistakes they make in judging distances, heights, and speed of vehicles, etc., cause them to be conscious of the dangers which will confront them when they resume work. These men require careful rehabilitation. On many occasions I have advised them to carry out simple tasks at home, such as knocking nails into a board, using a screwdriver, etc. These simple exercises combined with the playing of a ball game have greatly accelerated the process of visual readaptation, thus enabling the injured men to return to work sooner. It would indeed be helpful if rehabilitation centres were established at eye hospitals. There the one-eyed men and women could receive training for specified work, and psychological treatment could be given where necessary. (2) Compensation and litigation difficulties represent the next factor delaying the patient's return. I hope that the new Industrial Injuries Bill will safeguard the interests of the injured worker and enable him to return to work as soon as he is fit. The settlement of the claim should be left to a later date after the resumption of work. This procedure would save him many months of unnecessary hardship resulting from the loss of wages. (3) The last and very important factor causing delay in the return to work is due to the unwillingness of firms to employ one-eyed personnel. It should be made well known that the experience of many welfare and safety departments attached to several large factories in this country has shown that one-eyed workers, after the initial period of accustoming themselves to monocular vision, are, for practical purposes, as fully efficient as two-eyed people. Detailed accident statistics kept by the safety departments indicate that there is no evidence to show that one-eyed persons are more prone to accidents than the normal-sighted.

I am often asked by parents of one-eyed children and by labour managers of large industrial establishments what occupations I consider suitable for one-eyed people. Of course this depends on the vision of the one good eye. If this is 6/6 or 6/9 the one-eyed person can follow comfortably all occupations involving close work (clerical work, watch-making, jewel work, and even the fine close work required in the manufacture of artificial silk yarn or hose, and the inspection and manufacture of electric-light bulbs and radio valves). In the metal and engineering trades the one-eyed man with 6/6 or 6/9 vision is fit for most jobs, but of course I would advise against employment in operations which present a greater danger of injury to the good eye. If the vision of the sound eye is less than 6/12 I would suggest that gardening, farming, or domestic service are the most suitable occupations.

The eye injuries of this war will add a large number of men to the mass of one-eyed workers. Many of them will be anxious to return to their pre-war employment. The men should be advised against returning to work which involves chipping, hammering, or drilling metal. They should not be employed in underground work in the mining industry. Rehabilitation centres should bear this in mind when preparing them for future work. The examining factory surgeons and industrial medical officers should always remember that although one-eyed men and women are fit for most jobs the safety of the good eye should be the first consideration.—I am, etc.,

London, W.1. J. MINTON, F.R.C.S.

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Cephalin Flocculation Test in Malaria

SIR,—We read with great interest Dr. J. G. Makari's paper (Feb. 23, p. 272) on the cephalin-cholesterol test in malaria. We first became interested in the use of this test in malaria in August, 1945, and since then we have applied it to 18 cases of malaria, the results of which are tabulated below:

Type of Malaria	No. of Cases with Positive Blood or Marrow Smear	No. of Cases with Negative Blood Smears	C.C.F. 48-hour Result	
			Positive	Negative
P. vivax infections	14	—	11	3
Clinical malaria (*P. vivax*)	—	3	2	1
P. vivax and *P. falciparum* infections	1	0	1	0

It will be seen from this table that our results are in agreement with those obtained by Dr. Makari. Of the three clinical cases with negative smears, two were typical benign tertian clinical cases with histories of repeated attacks of malaria, and the third case was a patient with chronic malaria who had received treatment before admission. In this case the C.C.F. test was negative on admission. The only abnormal findings were a raised sedimentation rate and splenomegaly, both of which disappeared with further treatment.

Hippuric acid liver function tests were carried out on 8 of our cases; the results varied from 83 to 122%, normal average —all within normal values. In cases we were able to follow up we found that the C.C.F. reaction became negative with antimalarial treatment; the shortest interval after commencement of treatment and the reaction becoming negative was 10 days and the longest 60 days, this last being in a case of chronic malaria with a large spleen, no pyrexia, and parasites only present in sternal marrow. Generally we found that the decrease in flocculation was closely correlated to a fall in the sedimentation rate. Our tests were carried out with "difco" cephalin cholesterol and Hanger's method was used.

We are in agreement with Dr. Makari that the cephalin-cholesterol test is an index of malarial activity in the host's tissues, and we commend his suggestion that this test should be carried out in prospective blood donors. As well as excluding cases of malaria and infective hepatitis, it would also exclude cases of infective mononucleosis. Rosenberg (1941) describes three cases of infective mononucleosis in which the cephalin-cholesterol test was positive, and we have observed it on two cases, both giving a strong positive result. Incidentally the first mention of the use of the cephalin-cholesterol test in malaria that we can find in the literature is four cases described by Pohle and Stewart in 1941. In three of these cases the patients were suffering from syphilis of the nervous system and had been treated with malaria therapy, and the fourth was a case of acute tertian malaria. We hope to publish our own results in full at a later date.—We are, etc.,

JAMES P. A. HALCROW.
IAN WANG.

Hairmyres E.M.S. Hospital, East Kilbride.

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Sulphadiazine Anuria in a Gurkha

SIR,—Lieut.-Col. C. W. Healey (Feb. 9, p. 202) described five cases of sulphapyridine anuria in Gurkhas, and he concluded from his experience that they "are particularly liable to fail to excrete the products of modern chemotherapy." In Italy last year my field surgical unit was sent to look after the casualties of a Gurkha regiment engaged in the Apennine Mountains, just

before the final and overwhelming attack on the valley of the Po. Although we only treated Gurkha patients for this one month, our only case of sulphonamide anuria during that year (1945) in Italy occurred in a Gurkha patient, and the majority of our abdominal and head cases received sulphadiazine as routine post-operative treatment.

Rfn. A. B. C., aged 20 years, was wounded on the Gesso mountain on Jan. 10, 1945. He suffered from multiple shell-wounds of the head and a fractured scapula. The scalp was severely lacerated and the skull was fissured but not depressed. The scalp wounds were excised, penicillin was inserted, and all the wounds were sutured. A course of sulphadiazine was given by mouth for the first four days after operation (total 25 g.).

On Jan. 14 no urine was passed. Fluids and alkalis—sodium citrate 60 gr. (4 g.) four-hourly—were given by mouth in large quantities, but no urine was passed during the next twenty-four hours. On Jan. 16 intravenous glucose-saline was administered by drip infusion. Still no urine was passed. In the afternoon the patient had become drowsy, his face was oedematous, and his eyelids and legs were greatly swollen.

As the roads were blocked by snowdrifts and there was no possibility of obtaining a cystoscope or a ureteric catheter, a nephrostomy became essential. At 5.30 p.m. on Jan. 16, under open ether anaesthesia, the right kidney was exposed and found to be swollen beneath a tense capsule. On opening the pelvis of the kidney clear urine squirted out under pressure. The capsule was stripped off the convex border of the kidney, and a de Pezzer catheter was placed in the pelvis. During the next twenty-four hours 17 oz. (482 ml.) of blood-stained urine were passed via the nephrostomy tube and 5 oz. (142 ml.) per urethram. The patient was still oedematous and his sputum became profuse and frothy in the afternoon of Jan. 17. The infusion was stopped at once and his general condition improved rapidly. During the next twenty-four hours 20 oz. (568 ml.) were passed via the nephrostomy and 45 oz. (1.3 l.) were voided normally. At 7 p.m. on Jan. 18 the urine was noticed to be clear and free from obvious blood. The oedema had subsided considerably. Next day the patient was cheerful and alert, and the oedema had disappeared. Henceforth he passed clear urine in normal volume each day.

The patient was allowed up on Jan. 26 and the nephrostomy tube was removed next day. He was evacuated to the rear on Jan. 29 and his M.O., Capt. Naqi, *M.C.*, I.A.M.C., reported that he ultimately returned to duty some weeks later.

I believe that sulphonamide nephrosis, or ureter obstruction due to crystal precipitation, can be prevented in nearly all British patients if there is an adequate fluid intake—5 to 6 pints (2.8 to 3.4 l.) daily. However, if the fluid intake has been allowed to fall whilst the drug is being administered, oliguria, pain in the loin or epigastrium, and haematuria may occur. In this early stage the patient can be treated successfully by intravenous glucose-saline infusion. Alkalis may possibly help, but I am not convinced of their efficacy. If anuria is allowed to ensue, washing the pelves out with saline through the ureteric catheter usually relieves the patient. If this process fails or is impracticable, a nephrostomy, performed in good time, can usually be relied upon to save the patient.—I am, etc.,

Leeds. MICHAEL C. OLDFIELD.

Ocular Signs in P.O.W.s from the Far East

SIR,—The condition referred to in both Dr. H. G. Garland's and Capt. W. M. Rich's letters (Jan. 26, p. 143, and March 2, p. 330) is one well known to observers in West Africa and other tropical countries. For the first time, apparently, it has now been observed in Europeans, and under conditions permitting accurate observation. During my time as Army ophthalmologist in Freetown, from 1941 to 1943, I have seen a large number of these cases among native troops. They were at that time regarded as a "kind of avitaminotic retrobulbar neuritis." I ran some series of vitamin administration: red palm oil (riboflavin, vitamins A and D), pure riboflavin, marmite, and nicotinic acid. Uniformly negative results forced me to the conclusion that the condition was not an avitaminosis; at least not one in the accepted sense of the term. Investigations into the customary diet of these men, however, made me suspect a protein deficiency, or rather a "poisoning" by certain kinds of low-grade protein.

Last summer, in Rangoon, when thousands of relieved P.O.W.s and internees passed through our military hospitals on the first stage of their way home from Thailand and Indo-China, we found about 1% of the men suffering from an identical complaint. The history given by the men and the disappointing results of vitamin administration brought me to the same conclusion I had reached two years before: that the so-called "avitaminotic retrobulbar neuritis" was not caused by lack of vitamins at all but by some toxicosis due to lack of good proteins or to certain low-grade proteins In addition there seemed some constitutional and psychological factors involved.

It was interesting to listen to the nearly stereotyped case histories related by these men, how they dated the beginning of their complaints to a period of uniformly bad diet in the spring of 1943, and how in the time following they observed temporary improvement of their vision whenever an egg or a scrap of meat could be obtained. On hearing such a story every contemporary medical observer with his vitamin-conditioned mind will jump to the seemingly obvious conclusion—and then be disappointed by unsuccessful treatment. There is, of course, the true retrobulbar neuritis of beriberi which invariably leads to optic atrophy. Optic atrophy of the papillo-macular bundle was indeed observed frequently, but its occurrence bore no relation to the incidence of the scotomata, which rather seemed to be an independent symptom of this peculiar toxic amblyopia.

While I do not claim any originality for these views, I hope that these remarks will help to throw more light upon this rather puzzling condition.—I am, etc.,

H. GOLDSMITH,
Late Major, R.A.M.C.; Ophthalmic Specialist.

Nottingham.

Quinine for Induction of Labour

SIR,—I read with interest Dr. Eneas Mackenzie's letter (March 2, p. 333) on the use of quinine for medical induction, but am rather at a loss to discover what exactly he is able to prove by the figures which he gives. It would appear that he disagrees with Mr. Neon Reynolds's statement that the use of quinine is a "thoroughly bad practice which is productive of many stillbirths each year." He then goes on to say that in 105 cases out of 647 he used quinine as a method of induction without a single stillbirth.

First, I would like to point out that a series of this size proves very little; it is not, in fact, statistically "significant." On the other hand, one must say in fairness that all the available evidence is not on the side of Mr. Reynolds and against Dr. Mackenzie. Dilling and Gemmel (*J. Obstet. Gynaec. Brit. Emp.*, 1929, **36**, 352; 1930, **37**, 529) record their observations on the dangers of quinine in these words: "Although there is experimental evidence to prove that quinine may cause intra-uterine death, statistics show that this risk is not greater than that of stillbirths from undiscovered causes in otherwise normal labours." Dodds (*J. Obstet. Gynaec. Brit. Emp.*, 1931, **38**, 827), in a series of 338 cases, came to a similar conclusion. On the positive side, however, Munro Kerr denies that the use of quinine has any influence on either the duration of labour or uterine inertia; and on page 69 of his *Operative Obstetrics* mentions that Theobald (*Journal*, 1943, **2**, 851) recommends it very strongly, while Buddee (ibid., 1934, **1**, 1159) questions its efficacy.

I would like to know, however, exactly what the following statements in Dr. Mackenzie's letter are really meant to convey.

1. "I have found it a most helpful procedure." To whom is it helpful—to the mother, the baby, or the doctor? How may this helpfulness be assessed?

2. "There is a proper stage in pregnancy when quinine can be used with safety and success." This is a simple and dogmatic statement made without any statistical backing. How does Dr. Mackenzie arrive at an estimate of propriety, safety, and success?

3. "To use it at the wrong time and in the wrong type of case is to court disaster." This is true of practically any method in use in operative obstetrics—in forceps delivery, version, and Caesarean section, to mention a few only. What are the right time and the right type of case?

4. "I am, of course, not an F.R.C.O.G., and not even a D.R.C.O.G., and I have not been within a maternity hospital for 40 years; I am only a rural practitioner with no begowned, bemasked, and begloved assistants to help me; only a district nurse and 'an auld wifie to haud a leg.' Possibly had I Mr. Reynolds's qualifications and bevy of assistants I might have his results." As Dr. Mackenzie has been permitted to lapse into the idiom of "braid Scots" perhaps I may be allowed to

do the same, and to inquire whether it is by any chance possible that he has a "scunner" (dislike) for such new-fangled notions as higher obstetric qualifications, maternity hospitals, gowns, gloves, masks, and the like.—I am, etc.,

London, W.1. D. G. WILSON CLYNE.

Penicillin in Gonorrhoea

SIR,—In his article "Penicillin in Gonorrhoea" (March 2, p. 314) Dr. Alastair Allan stresses the need for a follow-up lasting twelve months in cases of gonorrhoea treated with penicillin. It would be interesting to know what facts or theories have led Dr. Allan to advocate this long period of surveillance.

My own observations in cases of gonorrhoea[1] treated with penicillin in doses of 100,000 units by the divided dose method have led me to believe that the six-months follow-up used in the Allied Armies is adequate. Indeed I have not yet seen any cases where syphilis became evident later than three months after penicillin therapy for gonorrhoea and without another exposure to possible infection. The incubation period of syphilis is lengthened by penicillin in the dosage used for gonorrhoea, but when signs of disease appear they are in no way altered, and *Sp. pallida* is readily demonstrable in primary lesions. In my experience, even after the treatment of syphilis itself with penicillin in doses of 2,400,000 units, cutaneous and mucous relapse phenomena appear in the majority of cases within six months after treatment.[2]

I think that Dr. Allan is overestimating the antispirochaetal powers of small doses of penicillin, and that any improvement in his default rate caused by speeding up actual treatment will be offset by the length of the surveillance period. It would be interesting to have the reasoned opinions of your readers on the length of follow-up necessary after the treatment of gonorrhoea with penicillin in the doses now used.—I am, etc.,

London, S.W.1. JAMES MARSHALL.

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2 —— (1945). *Nature*, **156**, 769.

Penicillin and Pursers

SIR,—It is interesting and comforting to read in Mr. James Hall's most instructive article (Feb. 16, p. 244) that penicillin is used (and with satisfactory results) under the direction of the pursers of many American ships. Surely the time has now come when the general body of practitioners in this country may be trusted with the precious stuff. I write not only as one of the "ninety-and-nine" unprivileged general practitioners whose work over the past few years has been from time to time embarrassed by this invidious veto, but also as one who, thanks to the timely action of a specialist colleague, owes his very life to penicillin therapy.—I am, etc.,

Worthing. O. P. CLARK.

Anaesthesia

SIR,—Dr. W. A. Bellamy (Feb. 16, p. 252) bows his devoted head awaiting the storm to burst: and I am sure it will burst indeed before very long. I should like to add my raindrop to the storm.

He deduces from the fact that the percentage of anaesthetic deaths has not decreased during the last fifteen years the curious conclusion that the older methods are equal in efficiency to more modern and elaborate techniques. It would appear to me (and I am open to correction by any statistically minded colleague) that this deduction is unsound. Surely it is since the introduction of these "tubes, taps, and turncocks" that surgery has become safer for a large class of patients who were poor risks under the open ether and chloroform techniques; and so a multitude of patients are submitted to surgery now who would not have been operated on at all previously. Thus it seems that if this mass of poorer-risk material is included in the statistics of anaesthetic deaths, the fact that the death figure is so constant is a credit to the newer methods. Furthermore, the percentage of deaths is not the only index of the success or failure of any anaesthetic method. The time the operation takes, the look of satisfaction or otherwise on the surgeon's face, the recovery time of the patient, and the incidence of post-operative complications, pulmonary and otherwise, all must be considered. The anaesthetist usually sees only the first two of these. As a house-surgeon I have seen the others, and over a period of many months, with various classes of patient, I have been able to foretell with reasonable accuracy who was going to be "chesty" after operation, who was going to have to endure the agonies of prolonged sickness after operation, simply by looking at the anaesthetist's name and knowing what method he used. If an anaesthetist wants to know if he is a good anaesthetist or not, he should consult the people who see his cases in the post-operative period—the housemen and the ward sisters. They know very well indeed who is good and who is bad without ever, of necessity, seeing the person concerned, or seeing whether he is a "tube-and-turncock" or a "rag-and-bottle" merchant.

But from my experience it is the open-ether patient who suffers most with chests, "ether eyes," and sickness. These things naturally do not alter the percentage deaths very much, but they do mean much to the patient both in the matter of comfort and in the willingness to have an anaesthetic again. With open ether one can give a good anaesthetic, of that there is no doubt; but one can also shoot a rabbit with a blunderbuss, and doubtless shoot it very well. The advent of "tubes, taps, and turncocks" does not of course by itself make the anaesthetic better, but it does place in the hands of the operator better and surer ways of controlling his anaesthetic agent. It is the anaesthetist who controls his agent who has the best results, interpreted in terms of help to the surgeon and post-operative comfort of the patient. Of course, to use the newer and more complicated machines one must study them and learn their uses and limitations. Shockingly bad anaesthetics can very easily be given using one of the most efficient machines if the operator does not know how to employ the control methods at his disposal.

I am glad to hear Dr. Bellamy say that housemen cannot give open chloroform. I have never given chloroform nor seen it used. I hope I shall never have to give it so long as safer agents continue to be available. It is, I feel, quite true to say that really good anaesthesia by inhalation methods is "a cult known only to a favoured few," and this few is only favoured in so far as they have the intelligence and common sense to study their equipment, use it carefully, choose the agent most suiting the patient and the operation, and, above all, at every stage, to control the anaesthesia.

Modern machines are designed so that the anaesthetist has perfect control over what the patient is breathing and when he breathes it. There are no superfluous knobs, taps, or tubes. The careful and skilled anaesthetist has welcomed these machines because they give him ever-increasing control of the anaesthesia; and he will continue to use them to the benefit and comfort of surgeon, patient, and staff, irrespective of whether percentage deaths fall over a period of fifteen years or not.—I am, etc.,

Aberdeen. MALCOLM R. MILNE.

SIR,—As an anaesthetist devoted to the art and banded together with Dr. A. H. Galley in the Anaesthetics Section of the R.S.M., I should like to congratulate him on his admirable reply (March 2, p. 332) to Dr. Bellamy's nostalgic wail over the otherwise unlamented passing of an era in anaesthesia characterized by a high incidence of post-operative morbidity. My feelings, however, were more poignant, since for twenty years I have striven to associate Aylesbury with progress in anaesthesia and have pleaded in the columns of the *Journal* for an eclectic attitude and flexibility of technique, whereby the drug or method calculated to produce the best result in each individual case may be employed.

With regard to "over-specialism," Dr. Bellamy's devoted head has remained so bowed that he has not noticed that the trend of the specialist anaesthetist is not to limit but to enlarge the scope of his activities, so as to include not only all branches of anaesthesia and analgesia, but also oxygen therapy, resuscitation, pre- and post-operative treatment, etc., the high value of his services in which has been abundantly proved in the late war. It would appear a far greater danger that he himself should become a super-specialist, such as an "avertinist" or "tribromethylalcoholist." Concerning simplicity, one of the

most famous "last words" (for the patient!) is, "Just give her a whiff, old man."

Finally, I should like to invite Dr. Bellamy to journey into Aylesbury and meet Mumbo and Jumbo (two fairly modern closed-circuit machines, so christened in his honour), and see for himself that they, in conjunction with their jungle pal Curare, are not so lethal or so complex as his perfervid imagination would lead him to believe.—I am, etc.,

Royal Buckinghamshire Hospital, Aylesbury. H. W. LOFTUS DALE.

Liver and Spleen Puncture

SIR,—It has occurred to me that the production of apnoea by overbreathing would make the operations of spleen and liver puncture easier and safer. The danger of these procedures is haemorrhage from tearing on respiratory movement while the instrument used is *in situ*.

According to Yandell Henderson *(Adventures in Respiration)* a normal man at sea level can stop breathing for 40–60 seconds. After forced breathing of air he can hold his breath for 2–3 minutes; breathing then recommences owing to oxygen lack and is periodic at first. If, after several minutes' forced breathing, he fills his lungs with oxygen he can hold his breath for 5–6–10 minutes. Breathing recommences without periodicity when sufficient carbon dioxide has accumulated. There is no oxygen lack.

Each patient could have one or more rehearsals to find out how long the apnoea in his case would be likely to last. Hyperventilation tetany is rarely produced by a few minutes' overbreathing; if it should occur and not pass off quickly when the overbreathing ceases inhalations of oxygen and carbon dioxide 5 to 7% or rebreathing from a paper bag will stop it.—I am, etc.,

St. Benedict's Hospital, London, S.W.17. MARY WALKER.

The E.S.R. Technique

SIR,—I am sorry to find that Dr. H. S. Gaskell (Feb. 16, p. 255) is not to be persuaded that the tube-length within wide limits makes no difference to the result when the rate is normal. It is something to find that he does admit that we should both sink at the same rate (barring the effect of salt water) in the Pacific as in the local swimming-bath, and I can assure him that the same principle applies to the rouleaux of red cells in the sedimentation rate. Stokes's Law makes no allowance for the distance the sinking body has below it, as the body soon attains a constant velocity.

When on the Committee of the E.S.R. of the Empire Rheumatism Research Council, my colleague and I worked out the whole subject of tube-lengths and bores at very great length, and I have voluminous records made on the automatic recorder of bloods put up simultaneously in tubes of widely varying bores and lengths. Even in tubes of 25-mm. length the normals come out the same at the end of the hour, and it is only when more rapid rates are measured that the short tubes give lower results, as a consequence of the earlier onset of packing. I can only imagine that Dr. Gaskell is thinking of these. I will gladly send him some of my charts if he is interested.

I am sorry to hear that Messrs. Hutchinson and Hunter have been so misguided as to call plasma "serum," especially in a test in which some authorities consider the fibrinogen to play a most important part.—I am, etc.,

London, W.1. J. W. SHACKLE.

Traveller's Oedema

SIR,—Dr. Zacopoulos's remarks (March 2, p. 322) about traveller's oedema reminded me of a similar condition which was prevalent among older people in a deep tube shelter to which I was medical officer during the "blitz." It was particularly noticeable before bunks were put up; the more select who did not wish to lie on the platform brought deck chairs, and I think the bar behind the knees was partly responsible.

In Sept., 1922, it was my fate to travel from Corfu to Trieste in a rather superior boat containing Greeks and a sprinkling of Armenians from the Smyrna "episode." These people had had their nerves frayed by what they had been through, and they grumbled bitterly to the captain. His deck was so small that they had no exercise and were suffering terribly from swollen legs and constipation. I heard the exasperated Italian captain say: "Look at that Englishwoman over there; I don't know what devilry she is up to now, but she is never still, and I bet you she has no constipation or swollen legs." And he was correct.—I am, etc.,

London, N.1. LINA M. POTTER.

SIR,—In his paper on traveller's oedema (March 2, p. 322) Dr. Zacopoulos does not mention two important aetiological factors. (1) The severity of the condition is much aggravated by a hot, particularly a hot and humid, climate. It commonly occurs amongst the crew of ships in the Tropics, yet I have never seen it in Northern waters. The circumstances of Dr. Zacopoulos's cases—a rail journey from Smyrna to Aleppo—suggest that the heat factor with its concomitant sluggish circulatory condition was present. (2) Tall asthenic people who have a poor circulation anyway, who faint easily, and whose extremities are always icy in cold weather, are usually first affected and develop the grossest swelling. It would be interesting to know the nutritional state of these soldiers. If the oedema of starvation were "just around the corner" it might account for the very high incidence amongst them.—I am, etc.,

Barking. G. S. WIGLEY, Surgeon Lieut.-Cmdr., R.N.V.R.

Physical Therapy in Mental Disorder

SIR,—Without wishing to enter any controversy regarding any comments of Dr. Leroyd concerning Dr. Frank, may I associate myself with Dr. Leroyd's letter (Feb. 16, p. 251) regarding convulsion therapy? What he says concerning its use as a punitive measure is unfortunately occasionally true. So is the indiscriminate use of a method which is valuable in the right cases. The following instance exemplifies the effects of its too facile use on the laity.

Recently while in the Middle East I was called into a hotel to see a middle-aged patient, who appeared to be developing a paranoid psychosis, though he had very good insight. He also had diminished ankle-jerks. Nevertheless a doctor who had seen him the day before had, without more ado, prescribed E.C.T. to be given in the hotel. Largely, I suspect, to rubber-stamp this surprisingly popular prescription, three psychiatrists, including myself, were then called in. (In the country in question it is the custom for consultants, like troubles, to come not single spies but in battalions.) We all agreed that a lumbar puncture was indicated; that a hotel, however luxurious, was not a suitable place for an incipient psychosis; and that, if the condition was not organic, in view of the good insight psychotherapeutic measures had a place in treatment. Also that certainly until investigations were completed E.C.T. was *not* indicated.

We explained this to the patient's mother. She vigorously resisted any question of investigation or hospitalization, and when we said that, at least pending investigation, we thought E.C.T. contraindicated, she exclaimed in horrified tones, "What, you do not wish him to have electric shock treatment?" and burst into hysterical sobs. The mother was undoubtedly a foolish woman, but even making allowances for that, the fact that an over-solicitous mother should be reduced to tears because caution was advocated in giving her son repeated major convulsions, is surely a striking commentary on a tendency to ladle out fits as though they were nothing more drastic than an aspirin tablet.—I am, etc.,

W. LINDESAY NEUSTATTER.

Homosexuality

SIR,—I cannot claim the specialized psychiatric experience and authority which might be regarded as a *sine qua non* for participation in this discussion, but I have recently had the opportunity of debating the subject with a friend who in a past official capacity had considerable responsibility in the conduct of prosecutions for offences which included those under review, and I think the impressions I have derived are worthy of communication to your columns.

My friend was candid in admitting an innate hostility towards defendants whose acts tended towards any injury of children, and he had no hesitation in segregating homosexual offences between adults as wholly distinct from those where children were involved. And, perhaps in consequence of such acknowledged bias, he criticized the exaggerated emphasis laid by the majority of your correspondents upon the position of the defendant to the exclusion of the dangerous effects which might be caused to the victim. Unless defendants in such instances can be classed as insane in the eyes of the law, it was only to be expected that courts should regard their acts as calculated and deliberate *vis-à-vis* their victims, and in this respect any "pathetic" element—to use a phrase of one correspondent—should apply to the victim rather than to the malefactor. On that basis, sentences which superficially appear unreasonably vindictive are justified to ensure protection of potential victims.

In my friend's experience those offenders, the subjects of a perversion which demands a child as participant, were in nearly all cases irreclaimable.—I am, etc.,

London, W.1. ADOLPHE ABRAHAMS.

SIR,—I have followed this correspondence with interest and bewilderment. Surely the first letter concerned an individual charged and convicted not with homosexuality as such but with repeated assaults on several children over a period of years—and assaults on children, whether homosexual, heterosexual, or sadistic, are regarded with disfavour by community and law alike. What two like-minded adults may do in privacy is very possibly their own concern, but this does not seem to be the point under debate, and perhaps it is partly because homosexual practices not infrequently result in assaults, and receive publicity in this way, that the opinion of the majority disapproves of such practices. If the community takes power to protect its property by means of the preventive detention of habitual criminals it may surely protect its children by similar means.—I am, etc.,

Birmingham. KATHLEEN A. H. SYKES.

Stethoscope versus X Rays

SIR,—Dr. E. Weatherhead (Feb. 23, p. 293) states: "Moreover, clinical evidence will often give more information as to activity or non-activity of pulmonary disease than is to be got from *x*-ray examination alone." As the terms "activity" or "non-activity" are never applied to any other pulmonary disease but pulmonary tuberculosis, I assume that Dr. Weatherhead means pulmonary tuberculosis. I have no intention to argue about the correctness of this statement, and I am writing only to draw attention to a gross fallacy which is hidden in it.

If by *clinical evidence* Dr. Weatherhead means auscultatory findings obtained by the use of the stethoscope, then the statement is absurd. On the other hand, if in *clinical evidence* he includes—and I must assume that he does—the interpretation of the temperature chart, pulse chart, weight chart, the results of haematological and bacteriological tests, and the application of exercise tolerance tests, then the statement has no bearing whatsoever on the present correspondence or on the opinions expressed by some members of the Royal Society of Medicine in their debate on "Stethoscope *versus X* Rays," to which some participants of this correspondence, including Dr. Weatherhead, so strongly objected. Indeed, in the light of Dr. Weatherhead's statement, the poor stethoscope strongly resembles a fifth-rate provincial "soccer" club entering the field on a special occasion with ten guest players—of international reputation.

Don't let us confuse the issue. The debate in the Royal Society of Medicine was not on "*X* Rays *versus* the Rest." It was clearly on "Stethoscope *versus X* Rays," which can be summarized in two questions with two simple answers: *Question 1.*—What evidence of pulmonary disease can be detected by auscultation which could not be detected by *x* rays? *Answer.*—Rhonchi and pleural friction rub. *Question 2.*—What evidence of pulmonary disease can be detected by *x* rays which could not be detected by auscultation? *Answer.*—Innumerable.

I whole-heartedly agree with Dr. Weatherhead that "the importance of this controversy lies partly in the fact that some of the statements made at the Royal Society of Medicine debate came from members of the teaching staffs of one or other of our own great London hospitals and might therefore be accepted as authoritative by junior members of the profession." The authority of Dr. James Maxwell, Dr. Peter Kerley, and Dr. Geoffrey Marshall needs no endorsement by the profession. Let us hope that the overwhelming majority of the junior members of the profession will take their teaching to heart and by insisting on *x*-ray examination, in spite of negative auscultatory findings, will succeed in saving many lives, which would have been inevitably lost without adequate radiology.—I am, etc.,

F. KELLERMANN.
Assistant Medical Officer, Essex County Council.

Haematuria after Injection of Haemorrhoids

SIR,—I was interested in the case of haematuria after injection of haemorrhoids quoted by Dr. Kenneth Hazell (Dec. 15, 1945, p. 864), for I have had one case recently. In this case 3 ml. of 5% phenol in almond oil were injected submucosally above the haemorrhoid, and when the patient reported one week later he stated that during the evening after the injection, which was given in the afternoon, he had painless haematuria. This had ceased by the following day.—I am, etc.,

Melbourne. S. L. STRANGE.

A Fundamental Principle

SIR,—At this hour it is encouraging to be able to assume that opinion is hardening against the introduction of a compulsory State service. I assume, that is, for one cannot suppose that you now depart in the least from your traditional policy of publishing a representative cross-section of all views, and there has recently been a sharp decrease in the number of letters in the *Journal* that truly support the planners' case.

Some of the exceptions continue to make strange reading. Whence does Dr. J. H. Wilson (Feb. 23, p. 295) derive the quaint conceit that doctors "never, never can be slaves" in virtue of their liberal and cultural background? In the first place, medicine is often pilloried as a technical body of men greatly inferior to those of other professions in regard to liberal culture. In the second place, a background of social and intellectual refinement does not confer the slightest immunity to enslavement; history may even be interpreted as suggesting that it may be an enervating influence conducive to slavery, as in the case of the ancient Greeks, for example.

The trite, poetic, and philosophic stress on the inalienable freedom of the mind hardly seems in issue when one is faced with the *de facto* legal status of slavery. If the antislavery workers in America a few generations ago had been impressed by these vague arguments they would have accomplished little. The physician-slave of ancient Rome seems to have enjoyed amazing freedom as contrasted with the position which his twentieth-century counterpart is likely to occupy: he had a wide discretion in technical matters, could often move freely about the land, could always take private patients, and was even encouraged to gain a fortune and perhaps to purchase his freedom with it. The Socialist student of history will be astute to prevent such lax abuses from recurring in future.

Again, Dr. Lennox Johnston (*Supplement*, Feb. 16, p. 35) deplores the reaping of the richest rewards in present-day practice by "the popularity-seeker and the humbug." One is amazed by the implied assumption that the seeker after popularity always obtains it, and that the humbug in England to-day can "fool all the people all the time." When will so perfect a State service be devised that popularity-seekers and humbugs can make no headway? The popular doctor (as opposed to the mere aspirant towards popularity) is in a position to do great good, and Mr. Somerville Hastings shows a wise and practical grasp of realities when he suggests popularity with patients as a standard for fixing remuneration in the new service, for general practitioners at least. His suggestion sounded strange in the mouth of a Socialist reformer, perhaps because it was such a good one.

And letters still emerge in print stressing *ad nauseam* how unthinkable and contrary to public policy would be a strike of medical practitioners. From the doctor's point of view the question of striking can never arise while independence is preserved; those who refuse to sign on the dotted line will not

have had the matter in their thoughts. From the public point of view the community can never even be threatened with deprivation of medical services unless and until the latter become a monopoly. And it seems possible also that rabid Socialists who enthusiastically surrendered their professional freedom too hastily and later became disillusioned and dissatisfied with their working conditions might find themselves obliged to stage a strike as the only available means of redressing their grievances. I can conceive of a medical strike within the ranks of a State medical service and nowhere else.—I am, etc.,

Stratford-on-Avon. PETER PARRY.

SIR,—From Dr. J. H. Wilson's letter (Feb. 23, p. 295) it is clear that in order to obtain a supply of doctors for "undesirable" localities he prefers nationalization and compulsion of the profession to improvement in pay and conditions for service in such areas. Those who disagree with him are "entirely selfish and unconcerned for the welfare of humanity as a whole." Would not "humanity as a whole" include the doctor's wife and family: are they not to be considered? Or perhaps Dr. Wilson might agree to further "direction" as to celibacy of the doctors concerned; it is quite conceivable from the tone of his letter.

With regard to the undesirable localities the first necessity for the welfare of the people is, of course, improvement in housing, environment, sanitation, more attention to character training, etc.; the presence of a few more doctors would hardly affect these matters which call for immediate attention.

It would be interesting to know what is meant by "the Government is about to take the cure out of our hands": presumably by conscription and exploitation of the profession. While there can be little doubt that the planners of to-day may take every advantage of the fact that the ethics of the profession would interdict such a step as "striking," it should be apparent that if the profession or even a percentage of it were to adopt a quite simple "non-compliance" procedure and still treat their patients, it would not be possible for bureaucracy to impose conditions which were not acceptable to the profession. It is surely obvious that this national medical service venture was not so much a political move as an attempt on the part of the lay machinery to get complete administrative control of the medical profession. If, in doing so, they should be so injudicious as to antagonize the profession it is quite certain that it will not be for the benefit of the public.—I am, etc.,

St. Mawes, Cornwall. B. H. SHAW.

The Minister Listens

SIR,—It is indeed pathetic to read the trend of so many of the letters referring to the forthcoming National Health Service—letters which are commencing to appear again after your article entitled "The Minister Listens." The trend of many of these can be summed up in the one word "sabotage." Sabotage is advocated before even the broad framework of the Bill has been put together; sabotage is enjoined before we know what the Bill proposes to do, or how it proposes to do it. Sabotage the wishes of the electorate expressed so definitely less than eight months ago and reinforced in every by-election since; sabotage the acts of the elected representatives of the people—representatives poured into Parliament by a determined nation.

There has already been more than enough sabotage. We remember that Sir William Beveridge's report was kept in cold storage for two years by the forces of the last Government, and was then followed by a White Paper which probably would have sufficed for another two years had not that Government been thrown out so decisively. We remember the protracted discussions with the B.M.A., and surely must assume that the Association's comments and objections to a National Health Service, and to the White Paper in particular, were all noted and annotated by a Minister who showed no trace of enthusiasm himself for taking concrete steps to make a reality of Assumption B.

The present Minister has before him, therefore, all the B.M.A.'s objections to even so milk-and-water a scheme as was set out in the White Paper, and the Association's suggestions to set up a few "experimental" health centres and proposal to report back on their working in the fullness of time. The present Government is one of action, and we cannot expect it to fall for any more of these Fabian tactics. Hence "The Minister Listens." No doubt he could indulge in months and months more of argument with our Association in the old tradition, but he appears, strangely enough, to prefer to get on with the job for which he was appointed, and for which a vast electorate is waiting.

Is it necessary for so many writers to advertise that doctors are unable to consider this scheme from any but their own narrow professional viewpoint, and indeed do not pretend to do so? That they cannot see the wood for the trees? That it matters nothing to them whether the wishes of the nation are implemented—or indeed the welfare of the multitude improved—so long as they and their methods, their convenience, and their emoluments are left unchanged in a world which is continually changing? And that, indeed, if there is any attempt on the part of some 40 millions to change the ways of some 50,000 of God's anointed for the benefit of their fellow men and to fit them into a more modernized, humane, and democratic framework for the national good, then they will call for the unity of all doctors to sabotage, sabotage, and again sabotage their share of the scheme, before even the proposals have been put into concrete form? Does any onlooker suppose that we are improving our chances of being allowed—yes, I say allowed—as responsible and important a part as we might otherwise have in the shaping of one of the memorable milestones of our history? The Minister listens—and the world looks on.—I am, etc.,

London. P. G. S. DAVIS.

A Critical Layman

SIR,—Having happened on your issue of Feb. 23, I find that it calls loudly for at least three lay comments.

1. *Diagnostic Acumen of the G.P.* (p. 294).—Why are the general practitioners so shrinkingly modest? The G.P. knows the patient as a person, and treats a person; the specialist merely treats a diseased organ. It is the G.P. who matters, and the specialist is simply one of his tools, like the stethoscope, only noisier and more expensive. It can do what he can't, but it cannot understand what it does. Dr. Mackay (believe it or not) remarks that "the day may come when everyone will be referred to the appropriate specialist by a sorting clerk." It may indeed, if the medical profession loses the power of independent thought. The view of the specialist as executive to the G.P.'s sorting clerk, instead of departmental adviser to the G.P.'s prime minister, is simply a relic of a philosophy of science already recognized (outside medicine) as superficial in 1910 and now merely regarded as a regrettable digression in the history of science. The single factor theory of science died for ever with the advent of the quantum theory and the relativity theory (to say nothing of Freudian theory and its derivatives).

2. Above all else it is the importance of the G.P. and his personal relationship with his patient that you need to drive into Mr. Bevan's mind now, when he is listening (p. 296). Yet what you allow him to hear is exemplified by Dr. Gair Johnston's sentence on page 42 of the *Supplement*: "Nationalization has always been a failure wherever it has been tried, and always will be until humanity become robots, which God forbid!" Knowing the importance of what they must make secure in a State medical service (which, in some form or other, is quite inevitable), it must be bitter for many members of the medical profession to find themselves supported by statements that can only give the impression that they have no rational case because they have not tried to think of one. I cannot help feeling that it is a mistake to allow so unfortunate a sentence even to slip into print.

3. When health centres are discussed why is the Peckham Health Centre, the only one aiming positively at health, ignored? When the profession discusses health centres with the Ministry it apparently means merely centres where disease, not health, is investigated and disease alone is treated. Why not call these places "disease centres" and keep the name "health centres" for organizations of the Peckham type? And may there be many "health centres." Incidentally, a family doctor is possible in a health centre, where he sees the whole family, but not in a "disease centre" in which he sees only sick individuals. The true G.P. must be a family doctor. Beware that with the march of pseudo-science you don't lose him altogether.—I am, etc.,

Knighton, Radnorshire. H. W. HECKSTALL-SMITH.

Are the People More Healthy?

SIR,—Statistics such as those in your leading article (March 2, p. 318) are apt to leave one cold, particularly those issued by Government Departments for propaganda purposes, especially when one remembers the reception given to our attendance records on the last occasion we attempted to get a living wage for N.H.I. work. In my experience, and probably in that of all G.P.s, the general health is much below par. This is shown by the lowered resistance to trivial complaints, the time taken to recover, the tendency to relapse, and the prevalence of deficiency-type skin troubles. My visiting list is now longer than at any time during or before the war, in spite of the fact that I am not attending any patients of my absentee neighbours, who have returned to their practices. I consider that this is due to the strain of the war and the inadequate and monotonous diet on which we are still subsisting.—I am, etc.,

South Godstone. H. E. GIBSON.

Tuberculosis in Childhood

SIR,—Dr. W. D. Gray's plea (March 2, p. 327) for more "preventoria" for children, suspect of tuberculosis but indefinite, seems to carry us back 30 years or more when medical opinion was far more favourably disposed to such provision than it is to-day. Some local authorities made quite generous arrangements, as instanced by an 80-bed sanatorium-school block added to an adult institution of about 120 beds; now only 25 remain allocated to children.

It is significant that Dr. Heaf's plea for more collective research is placed alongside Dr. Gray's letter. Lack of knowledge leads us to swing around with gusts of opinion for or against a given policy, with the result that "the infection continues to take toll of children and young adults as it passes through the population practically unchecked." A weighty indictment this from Dr. Heaf which Dr. Gray's subsequent letter illustrates with poignant clarity.—I am, etc.,

Moor Park, Middlesex. ESTHER CARLING.

The Colonial Medical Service

SIR,—If the leading article (Nov. 17, 1945, p. 693) was meant to "arouse interest among the younger members of the profession" as Mr. R. Ogier Ward says (Dec. 1, p. 781) then I think the many things that spoil the extremely interesting side of one's professional life should be brought to the notice of doctors intending to join the Colonial Medical Service.

In the advertisement periodically placed in the *Journal* by the Colonial Office for vacancies in the Colonial Medical Service, the service sounds most attractive with rosy prospects. "West Coast" (Jan. 12, p. 65) has already mentioned some of the defects and grievances. I, too, do not think many offers will be received from specialists if the salary is to be £1,300 a year. It is grossly unfair to allow private practice, as there are not many stations where private practice is available, and, as "West Coast" says, this leads to endless intrigue. If £150 is given in lieu of private practice this should be over and above one's salary. Little recognition is given of postgraduate studies and improvement of one's qualifications, with the consequent deplorable state of affairs that if you sit down and "do not blot your copy-book" you will do just as well as the man who has higher qualifications and will get the same pay. This does not encourage initiative.

In the advertisement put in by the Colonial Office no mention is made of the administration which the M.O. is called upon to do. This may amount to quite a lot, particularly if the hospital is owned by the Native Administration; so much so, that it is often difficult to find time to practise medicine. Surely it should not be the responsibility of the M.O. to check inventories of linen, etc., as is the case in the more numerous smaller stations without a sister. Again, if the hospital is owned by the Native Administration the amount of correspondence to be entered into with the Administrative Department to obtain money for any extra needs, however urgent, is simply amazing. Furthermore, I do not think it ought to rest with an administrative officer, often only too ignorant of one's needs, as to how much money one can have to purchase drugs, etc.: rather like the butcher, the baker, and the candlestick-maker telling the doctor what he ought and ought not to have. It is an analogy of this that we must prevent at home in the future under a State medical service.

Both Mr. Ogier Ward and Dr. R. B. Wellesley Cole (Dec. 22, p. 895) emphasize the importance of training more African doctors as an answer to the many difficulties that arise. But it is common knowledge that African M.O.s gravitate to the larger towns, entering private practice with the more attractive financial prospects. Even the African assistant M.O.s trained at the Government's expense leave Government service as soon as their contract expires, for the same reason.—I am, etc.,

"EXIT."

Final M.B. Examinations

SIR,—The memorandum on the teaching of tuberculosis to medical students (*Journal*, Jan. 12, p. 60) concludes by suggesting "that those diseases which have the highest incidence should receive priority in a teaching syllabus, even if it meant sacrificing time on the rare conditions, which always have a fascination and often assume an exaggerated importance in medical education for a qualifying degree."

At the last Final M.B. examinations in two universities one question out of six on the medicine paper was on the subject of pink disease. This disease is described in Conybeare's *Textbook of Medicine* (6th edit.), under the heading of "erythroedema polyneuritis," in twelve lines. Sir Henry Tidy is slightly more generous in his book and gives half of one of his thousand pages to the subject.

At one of these examinations I, as a so-called returning doctor, had decided to sit for my university degree. I had been invalided from the Services in 1943 with an apical lesion, and during the next two years had been in partnership in a busy general practice. Health reasons, however, forced me to give up the latter, and it was during an advised three-months rest that I decided to sit for the examination. My knowledge of the three final subjects was consequently based more on experience than on theory, and in my humble opinion was the average knowledge of an average general practitioner. My knowledge of pink disease was, of course, scanty, and my veiled attempts in my written reply to tell the examiner I thought it was a stupid question doubtless did not enhance my reputation with him. One of my surgery cases was an actinomycosis of the jaw, which had originally been referred to a general surgeon by a general practitioner and treated as an osteomyelitis. This treatment having proved unsuccessful, the case was eventually transferred to a great teaching hospital, and after some weeks there the ultimate diagnosis was reached. When I told the examiner that the diagnosis would not have occurred to me but for the suggestion of a friendly ward sister my reputation was again by no means enhanced. This was despite the fact that I knew the treatment. This examiner's partner in crime was even more ludicrous. I was shown a pair of artery forceps, which I described as a pair of Spencer Wells. This description was, however, rejected, and instead it was stated that they were a pair of 5-in. artery forceps with curved ends and a box joint.

The high-light of the examination to me was, however, when a consulting physician attempted (undoubtedly with success) to convince herself that I did not know the difference between chicken-pox and impetigo. This was during an oral examination. I do not know how many cases of either chicken-pox or impetigo the consulting physician had treated in the past ten years, but I have a fair idea of the number I have in the last two years, and as yet I have not used ung. hyd. ammon. dil., sulphathiazole, or penicillin to cure chicken-pox.

I submit, Sir, that the need for carrying out the suggestion put forward in my first paragraph is urgent and that the present system of examining for qualifying degrees is fundamentally unsound. Examiners ought not to be all specialists. The general practitioner is the backbone of the medical profession, and this particular branch absorbs a very high percentage of those obtaining qualifying degrees. Why, Sir, are they then not directly represented on examining boards? If they were it is just possible that less obscure and idiotic questions might be asked, more ordinary common sense might be required from the candidate, and altogether a healthier and more virile type of doctor might be produced.—I am, etc.,

"L.R.C.P.&S."

Diagnostic Acumen of the G.P.

SIR,—There can be no general practitioner, specialist, or consultant who has not made an error in diagnosis during his medical life. The difference is that the G.P. lives in the same town with his mistake, or the relations and friends, and is never allowed to forget it. His mistake teaches him a lot. Not so with the consultant; he gives his diagnosis and appears to

imagine that he is always right. I have had consultations with a large number of "experts" in the last twenty-five years, but only one is humble enough to make inquiries later on as to the accuracy of his diagnosis.

If it were the custom, as it should be, not only to write a letter to the consultant on the patient's visit to him, but to follow it with a second stating results, I think there would be more bowed heads in Harley Street than in the past. All G.P.s could give many cases of errors by reputable men. I have a patient now who has been seen by five physicians, each of whom has made an entirely different diagnosis, and each now thinks (if he thinks of the case at all) he is an astute physician; but four of these five must be wrong. I do not want to cause embarrassment to many of my friends, and ask to be allowed to sign myself

"G.P., SURREY."

International Society of Medical Hydrology

SIR,—It has been decided to hold the first post-war meeting of the International Society of Medical Hydrology on Oct. 4 and 5 at Buxton, and all local treasurers of foreign countries are being circulated in order to try and obtain a reunion with our colleagues abroad. In addition to the annual business meeting there will be in October a series of papers and demonstrations on hydrology in its application to the rheumatic diseases. Lord Horder has accepted the office of president for the year, our last president in 1939 being the late Sir Farquhar Buzzard. Practitioners wishing further information should get in touch with the local treasurer for Great Britain, Dr. Neligan of Droitwich.—We are, etc.,

J. BARNES BURT,
Chairman of Executive Committee.
GEORGE D. KERSLEY,
Vice-Chairman of Executive Committee.

The Disabled Persons Register

SIR,—I am interested in the correspondence on this matter and feel that Dr. J. S. Laurie (Feb. 2, p. 183) has done us a service in opening the question. Although much of what he says has already been adequately answered, I think that more detail may not come amiss, and this might best be expressed in further answers to some of the points raised.

First, although it might appear to an outside observer that many employers act as Dr. Laurie suggests, I do not think this is so. It must be remembered that employers are encouraged to help the authorities' efforts to get disabled persons to register under this Act, for it is the specific intention to persuade every disabled person in the land ultimately to place himself on the register. This is not so easy as it would seem, for there is a marked reluctance on the part of many disabled persons to label themselves as such because it seems to them that by doing so they would reduce their market value as employees. Most employers, in my experience, employ a number of disabled persons (both from the first world war and from industry), and are quite ready to employ more *provided these persons can do the work set them and so earn their pay*. The average employer does not care at all what ailments or deformities a man may have so long as he pulls his weight and maintains reasonably good attendance and punctuality.

Secondly comes the question of the disablement, and the Act (Section 1) is quite clear on this point. The disabled person must be "substantially handicapped in obtaining or keeping employment, or in undertaking work on his own account, of a kind which, apart from that injury, disease, or deformity, would be suited to his age, experience, and qualifications; and the expression 'disablement,' in relation to any person, shall be construed accordingly."

There are, however, border-line cases, and quite adequate machinery has been set up for dealing with these. When a person applies for registration his claim is carefully scanned by the appropriate Ministry official, who is well versed in the Act and its requirements, and, unless the case is quite clear and straightforward, it is referred to one of the district panels. These consist of representatives of the employers, the employees, and of people who are neither and are quite neutral. The panel is advised by a doctor who is paid for his services and has a vote on the panel. The person claiming disablement and whose case is doubtful is first examined by a medical referee appointed by the Ministry, and, in due course, is interviewed by the panel, whose members have before them all available information, including the certificate (if any) from the claimant's own doctor and the one from the medical referee. The whole case is then considered by the panel, whose doctor advises them, where necessary, as to the medical evidence, and the claim is then decided. I can assure Dr. Laurie that very few frivolous or insufficiently substantiated cases get through. It must be remembered that the panel is answerable to, and works under the direction of, a district advisory committee, again composed of employers' and employees' representatives and of neutral members who are neither the one nor the other. The work is carefully done and carefully checked.

To return to the disabled person. Industries vary, and there is little room for the disabled in some of them, while others lend themselves very well indeed to the successful and profitable employment of handicapped people. In the heavy or otherwise unsuitable industries the very limited number of suitable jobs are soon filled, so that it is then impossible to do more, and it is here that the register will confer its maximum benefit, for the disabled people who cannot be absorbed into their own industry can be offered suitable work in other industries where they not only can earn their living but can be trusted and valued workers, because they have suffered and learned and value their opportunity to justify their existence. If such people are not registered they will simply go on to the scrap-heap, as they have done in the past, to become neurotics or embittered misanthropes. I, in common with all industrial medical officers, have repeatedly demonstrated that there are few people who cannot work at something, and we have seen numbers of people with well-nigh incredible handicaps working successfully at normal occupations and asking no indulgence. The work, however, must be carefully selected, and this means that the people have to be found and classified and the available posts into which they can be put have to be known and listed. Disablement has many surprises, and it sometimes falls out that a man who cannot do light work in one industry finds (sometimes to his own surprise) that he can do quite heavy work in another.

The effort to place handicapped people in proper employment is the main reason which leads the employer and his medical officer (who are encouraged to do so by the authorities) to urge many disabled persons to register. A number of these disabled people work hard and faithfully in circumstances that are bad for them and that need effort which is sometimes heart-breaking. Is it not utter stupidity for them to continue to do so if suitable work can be found for them? It must be remembered that all *substantially* disabled people are eligible whatever be the cause of their disablement, and it seems, to me at any rate, absurd to put them unnecessarily to hardship.

I am entirely in agreement with Dr. Laurie when his conscientiousness impels him to insist that the onus of deciding whether a man is sufficiently disabled to be entitled to a certificate should not be placed upon the G.P. Human nature being what it is, there will always be a minority of workers who will want to wangle themselves into something easier than what they are doing and of employers who shirk the effort necessary if they are to give their maximum help in absorbing handicapped people, and the unfortunate doctor in practice may often be exposed to the risk of offending patients and courting unpopularity. I think it would be better if the candidate were referred directly to the Disablement Officer and examined by the Ministry's medical officer, who, of course, should be an experienced industrial medical officer. At the same time, it must be remembered that the expert in industrial medicine has his difficulties too. He may know as much as anyone about industry, but he knows only as much, or as little, of the person's history as that individual chooses or is able to tell him. In many cases it is only the patient's own doctor who can give an opinion which is more than so much waste paper. As an example: Is "A" really an epileptic? How often and severe are his fits? Does he wet himself in his fits? Are there any post-epileptic sequelae? Is he in the early stages of degeneration? How much narcotic is he taking? How am I, for instance, to find out on one examination? Examples could be multiplied *ad nauseam*.

I would suggest, therefore, that the man's own doctor *must* be in the picture in a goodly proportion of cases. The objection, of course, is that the unfortunate G.P. already fills up all the medical forms which an industrious bureaucracy has devised to

date, and nobody sees any prospect of a stop in the steady flow of unpaid clerical work that flows in upon him. He should get a fee for his certificate, and the result of this, I think, would be, as I have already suggested, that the disabled person would be instructed to apply direct to the Disablement Officer, who would refer him to the medical referee. In cases in which the medical attendant's opinion was important or necessary his views would be requested and he would be paid for his advice.

It is intended under the Act to "designate" certain forms of employment, which means that these designated vocations will be set aside for disabled people, and that it will be illegal for an employer to give such work to a fit person unless and until there are no disabled people readily available. To my mind this is wholly good and will go a long way, not only to preserving the self-respect and material prosperity of a class of people who really need help, but also to checkmating the activities of that small but noisome minority of lazy and unscrupulous people who trade upon the laws designed to help the unfortunate, and who thus bring undeserved discredit and annoyance to their fellow workmen, who regard them and their practices even less kindly than I do. Equally it would make it impossible for that similarly small and unpopular corresponding group of employers to evade some, at least, of their responsibility.

The Act lends itself to modification and development (by Statutory Regulations and Orders and by memoranda, or even, later on, by amendment in Parliament), and it is possible to foresee a time when its provisions will be available to that class of people who, while not being "substantially handicapped" within the present meaning, are yet so affected by disease, injury, etc., as to be at a serious risk or handicap in the employment they follow. Numerous examples will occur to any G.P. of experience, and a little reflection will satisfy anyone of the tremendous possibilities opened by such a development in the cure and rehabilitation of that large group of the chronically sick whose conditions depend largely on various physical environmental maladjustments, and who, at present, are unable to avail themselves, except at the cost of their jobs, of the fullest opportunities of expediting their recovery or, alternatively, of preventing steady deterioration of their health.—I am, etc.,

Wear Shipbuilders' Association, Sunderland. A. KEFALAS.

The Metric System

SIR,—Perhaps I am trying to infuse fresh blood into a stale corpse, but your annotation (Jan. 5, p. 19) prompts me to make the attempt.

Pro.—The metric system is international.

Con.—When the Basle Nomenclature was introduced into anatomy about 1909 the same argument was used, the advocates never realizing that it was far more important for students to understand their own professors than for the latter to understand some erudite gentlemen in Basle or Berlin. Result, the unhappy student had, and I believe still has, to learn two systems of nomenclature, and the confusion still persists, "which," to quote your annotation, "is a sobering thought."

Pro.—The metric system is scientific.

Con.—We all know the therapeutic value of the apparently mystic symbols in our prescriptions, and it would be a thousand pities to destroy the public faith in this mystery by replacing our signs with something "understanded of the people." Change aqua menth. pip. to aqua chloroformi, and the patient will complain that "the new medicine is not the same as the old," the implication being that it is not so good. In this Eastern land, where faith abounds, I have even had a zealous patient swallow the prescription with both relish and apparent benefit.

Pro.—The metric system is easily remembered.

Con.—Perhaps it is in the larger doses, but what about the small? We can imagine a busy practitioner inadvertently misplacing a decimal point, or even waking in a cold sweat at 3 a.m., thinking, "Hyoscine, I know the dose is a two-hundredth of a grain, but is it 0.0003 of a gramme or 0.003? Is it 0.3 or 0.03 of a milligramme? Shades of Dr. Crippen, I must have poisoned the woman!"—I am, etc.,

H. WILLIAMSON,
Lieut.-Col., I.M.S.; Surgeon to H.E. the Viceroy.

New Delhi.

Obituary

RALPH STOCKMAN, M.D., LL.D.

Ralph Stockman, emeritus professor of materia medica and therapeutics in the University of Glasgow, died in his eighty-fifth year on Feb. 27. Born in 1861 at Leith, the son of W. J. Stockman, a merchant in that town, he was educated at the Royal High School, Edinburgh, from which he proceeded to the study of medicine at the University of Edinburgh. After graduation in 1882 he spent two years at the Universities of Vienna and Strasbourg before returning to Edinburgh. In 1886 he obtained the degree of M.D. with high distinction, being awarded a gold medal for his thesis. He became a member of the Royal College of Physicians of Edinburgh, of which he was elected a Fellow in 1889. From his student days he was interested in the actions of drugs, and on his return to Scotland from the Continent began his life work in the teaching of pharmacology or, as it is called in Scotland, materia medica. First as an assistant in the University department at Edinburgh and then as a lecturer in the extramural school of medicine he established a reputation as a teacher which was enhanced after his appointment in 1897 to the chair of materia medica in the University of Glasgow. This appointment he held till his retirement in 1936. In the following year the degree of LL.D. *honoris causa* was conferred on him.

From his early days Stockman emphasized the importance of correlating pharmacological work with clinical experience. It was not therefore surprising that on his arrival in Glasgow he was appointed a physician to the Western Infirmary. In the following year he was elected a Fellow of the Royal Faculty of Physicians and Surgeons of Glasgow. In Glasgow he exerted a profound influence on the development of the medical curriculum. During his tenure of the chair there was a great expansion in facilities for the teaching of the basic sciences, and his own department was greatly enlarged. In the conduct of his classes in the lecture-room, laboratory, and above all in the clinic he held to the view that the most important function of the teacher is to separate the grain from the chaff. Inevitably during a period when pharmacology was slowly being established as a science, his teaching tended towards scepticism which perhaps rather overwhelmed those who liked to lean on authority. The stronger minds, however, were infected by the enthusiasm of one with a full personal knowledge and with a sense of obligation to contribute to the sum total of human knowledge. They felt that they were in the presence of one with the viewpoint of Locke that the purpose of education is to "get a relish of knowledge," Throughout his teaching he stressed the importance of the historical outlook, without which one's appreciation of any problem, social or scientific, is limited.

For Stockman the study of disease began with the patient. As physician and clinical teacher he showed outstanding clinical acumen combined with an appreciation of the sick person as an individual possessed of hopes and fears and as a member of the community having social obligations. To take part in a ward round with Stockman was an experience never forgotten. He used the Socratic method of instruction and his remarks were illuminated by his vast personal experience, his knowledge of literature both medical and general, and his great critical faculty. He possessed those qualities of mind described by Hippocrates as indispensable for a physician—learning, sagacity, humanity, and probity. Throughout his career he was engaged in investigation, and his published papers include work on the coca alkaloids, the camphor group, the arrow poisons, lathyrism, and many other subjects. Worthy of special mention are his contributions to the pharmacology of iron and to the aetiology and treatment of chlorotic anaemia. This work has stood the test of time, to be confirmed by recent investigations with modern analytical methods. During his stay in Glasgow he became specially interested in the study of the chronic rheumatic diseases, and based on the results of this work is his monograph on *Rheumatism and Arthritis* published in 1920. This, a model of clear thinking and lucid writing, has done much to get rid of many useless beliefs, an essential prerequisite for scientific

work. In the words of Osler he believed that "to the physician a scientific discipline is an incalculable gift which leavens his whole life, giving exactness to habits of thought and tempering the mind with that judicious faculty of distrust which can alone, amid the uncertainties of practice, make him wise unto salvation."

Throughout his occupation of the chair at Glasgow he took an active part in the communal life of the university. He was specially interested in the life of the students and for many years was senior vice-president of the Union, which benefited greatly from his wise and kindly supervision. Among students he achieved a great popularity. Perhaps somewhat afraid of his wit, which at times was keen, they always came to realize that in Ralph they had someone who, realizing their weaknesses, was zealous in their defence and for their welfare. Many Glasgow graduates all over the world will hear with regret of the passing of one of the great figures of their student life.

After his retirement in 1936 he moved to Edinburgh but still took an active interest in friends and affairs. Till the very end there was no lack of mental energy and the freshness and pliancy of his mind did not for a moment fail. He is survived by his sister, to whom he owed much and who was his companion and counsellor, acting as hostess and endearing herself to all who know her by her wisdom, wit, and charm. Of Ralph Stockman one might say that he

> "Loved no darkness,
> Sophisticated no truth,
> Nursed no delusion,
> Allowed no fear."

N. M.

Prof. Stockman had joined the British Medical Association as long ago as 1884, was awarded a B.M.A. scholarship in 1886, held office as vice-president of the Section of Pharmacology and Therapeutics at the Edinburgh Meeting of 1898, and as president of that Section of the Belfast Meeting in 1909. At headquarters in London he served on the Science Committee, on the Standing Therapeutic Subcommittee set up in 1919, on the Organization of Medical Students Subcommittee, and on the Medical Students and Newly Qualified Practitioners' Subcommittee.

W. S. A. GRIFFITH, C.B.E., M.D., F.R.C.P., F.R.C.S.

Dr. W. S. A. Griffith lived long enough to become the patriarch of his branch of medicine. After many years in retirement at Chelsea and later at Haslemere he died peacefully on Feb. 26 at the age of 91. He had been consulting physician-accoucheur to St. Bartholomew's Hospital since 1919, when he resigned from the active staff, and he was also consulting physician to Queen Charlotte's.

Walter Spencer Anderson Griffith was born at Brighton in 1854 and went to school at Brighton College, where his father, the Rev. John Griffith, LL.D., was headmaster. His younger brother, F. L. Griffith, D.Litt., professor emeritus of Egyptology in the University of Oxford, died twelve years ago. Walter Griffith began his medical study at the Royal Sussex County Hospital, Brighton, and went on to St. Bartholomew's, qualifying as M.R.C.S. in 1878, and after holding house appointments obtained the F.R.C.S. in 1881. Deciding to take degrees at Cambridge he entered Downing College and kept the statutory nine terms by sleeping at week-ends at Cambridge while he lived in London. He graduated M.B. in 1885 and proceeded M.D in 1889, and was elected F.R.C.P. in 1893. The decision to devote himself to obstetrics and gynaecology had been taken in the early 'eighties, and his outstanding ability secured the posts of physician-accoucheur to the Great Northern Hospital, teacher of midwifery at St. Bartholomew's, physician to out-patients at the Samaritan Hospital for Women, and physician to Queen Charlotte's Lying-in Hospital. At that time James Matthews Duncan was at the height of his fame in London. On Duncan's death in 1890 Francis Champneys was recalled from St. George's Hospital to take his place as head of the obstetric department at St. Bartholomew's and Walter Griffith was made physician-accoucheur with charge of out-patients. The chief things that Sir Francis Champneys and Dr. Griffith (colleagues for many years) had in common were their devotion to the memory and teaching of Matthews Duncan and their fondness for music. Griffith succeeded Champneys in the senior post, and on retiring under the age limit at 65 was elected consulting physician-accoucheur, a governor of the hospital, and a member of the house committee. He was also consulting gynaecologist to the Queen Alexandra Military Hospital, Millbank. He examined in midwifery for the Royal College of Physicians of London in 1893–7 and served on its Council in 1914–16; he represented the Royal College of Surgeons of England on the Central Midwives Board. He had joined the B.M.A. in 1880 and held office as secretary of the Section of Obstetric Medicine at the London Meeting of 1895 and president of the Section of Obstetrics and Gynaecology in 1900 at Ipswich; he had also been president of his section at the Royal Society of Medicine. He was created C.B.E. for his services during the war of 1914–18, and the Medical Defence Union made him president in 1932.

Dr. Griffith enjoyed teaching and mostly used the Socratic method. Bart's men of a former generation will call to mind his mornings in the shabby little out-patient room of those days; the tall central figure topped by a black velvet skull-cap and perched on a high stool, one hand pointing with a uterine sound to the student chosen for ironic interrogation, while beside the couch stood a nurse guarding the shrouded patient from the packed audience. Much was learnt at those clinics, but few could stand up long to the master's flow of questions without loss of composure; though a legend survives that one habitual wag, after angling for the dunce's chair, gave a tit-for-tat. "Now, Mr. Black, suppose I have tried all the interesting things you tell me to do in this emergency and have failed. What do I do next?" "If I were you, sir, I would send for Dr. Champneys." History does not say if Dr. Griffith joined in the laughter, but he had a sense of fun beneath a formidable manner. His lucid and practical teaching, both at St. Bartholomew's and at Queen Charlotte's, was eagerly sought and gave a long line of students their groundwork in the art of midwifery.

DAVID RORIE, D.S.O., M.D., C.M.

Dr. David Rorie, one of the most distinguished poet-physicians of Scotland, died on Feb. 18 in his 79th year. He had long been established in practice in Cults, but had retired from the active work of his profession in 1933. At the outbreak of the present war, though full of years, he was anxious to render what service he could and continued to serve on medical boards till within a few months of his death.

He received part of his preliminary education in the Aberdeen Collegiate School and later matriculated at Edinburgh University, where he graduated M.B., C.M. in 1890, and in 1908 proceeded to the degree of M.D. In 1911 he took his D.P.H. with honours in the University of Aberdeen. After graduation he spent some years in general practice in the mining districts of Fifeshire, a period of his life to which he frequently referred, and in that work he laid the foundations of that deep understanding of human nature and sympathy with the underdog which was so characteristic of him in his later years, and which so deeply coloured his life's work both in medicine and in literature and is expressed so poignantly in some of his more serious poems.

At the outbreak of the first world war he was mobilized as a captain, R.A.M.C.(T.F.), but was rapidly promoted to major in 1915, and lieut.-col. in 1916, acting as O.C. 1/2 Highland Field Ambulance. Later he became full colonel and acted as A.D.M.S. to the 51st Highland Division, with which he served throughout the war. For his services he was awarded the D.S.O. in 1917 and in 1918 was made a Chevalier de la Légion d'Honneur. In addition he became the unofficial poet laureate of the 51st and was reported to be the anonymous author of many of the famous marching songs of that division, though to this he would never admit. In 1929 he published his own reminiscences in a volume *A Medico's Luck in the War*, which recounts the medical history of the gallant 51st. In the first chapter his satirical humour is given full scope and he recounts with gusto many a good story of the Colonel Blanks of that generation. Throughout his life he maintained his interest and affection for the ex-Service men and became one of their doughtiest champions. Largely due to his efforts the local branch of the British Legion was founded, of which he was the president from 1922 onwards, as well as serving on the national council. His years in France remained for him a

happy memory, since, perfervid Scot as he was, he had an intense interest in the French—their history and their culture as well as a considerable knowledge of and facility in their language and literature—and to him it was historically appropriate that the 51st should be serving in the fields of France, for that was but a modern continuation of the "Auld Alliance." In the post-war years he remained an active member of the Franco-Scottish Society.

He took his full part in the communal life of the profession, a regular and enthusiastic member of the Aberdeen Medico-Chirurgical Society, and a loyal member of the British Medical Association, being chairman of the Aberdeen Division 1924–9 and president of the Branch 1932. At the Annual Meeting of the Association in 1914 he was honorary secretary of the Section of Medical Sociology and, for the 1939 meeting, editor of *The Book of Aberdeen*. He was much in demand as an after-dinner speaker, an art in which he was highly proficient. At the annual dinner of the Medical Society he generally contributed a poem composed for the occasion, in which, with great good humour and wit, he satirized the foibles and failings of his best friends and of medicine generally, all in the classic tradition of François Rabelais.

Deeply interested in folk lore and folk medicine he contributed many articles on these and kindred subjects to the *Caledonian Medical Journal*, the *Edinburgh Medical Journal*, the *B.M.J.*, and other lay and medical magazines. "Folk Lore of Mining Folk of Fife," one of the earliest, was published in the Folk Lore Society's County Series. For many years he was editor and later joint editor of the *Caledonian Medical Journal*. His own two volumes of poems, *The Auld Doctor*, 1920, and *The Lum Hat Wantin' the Croon, and other Poems*, 1935, were known to all Scotsmen and were sung or recited in all parts of the world where Scotsmen foregather. Perhaps his very facility in the use of the Scotch vernacular and his sparkling wit and humour were not altogether an advantage in that they tended to obscure the beauty of his more serious poems such as "Daylicht has Mony Een" with its unforgettable last verse. In the preface to *The Lum Hat Wantin' the Croon* he gives his own too modest estimate of his poetry, where he describes himself as "leaving a gangrel's stance on the lower steps of Helicon."

Perhaps to those who loved him—and they were legion—the St. Andrew's Cross which formed his pall and the wreath of Flanders poppies were fittingly symbolic of the life and achievement of that serene and radiant spirit that was David Rorie.

A. GREIG ANDERSON.

David Rorie occupies a place of his own in modern Scottish letters. For over fifty years he has been known to Scotsmen and the friends of Scotsmen all over the world as the author and composer of the "Lum Hat Wantin' the Croon," a rollicking, humorous ditty which has probably been sung at more convivial entertainments than any other contemporary lyric. Unfortunately, while the "Lum Hat" made Rorie famous, in its way it did him some disservice by identifying him rather more closely than his talent and his philosophy warranted with the farcical and the extraordinary in verse. He certainly was the author of a long string of exceedingly funny songs like the "Pawky Duke," "Macfadden and McPhee," "The Speeshalist," and many more of that kind which, although a great deal of sense goes through the comedy, can hardly be expected to be remembered except as outbursts of high spirits. Rorie, however, could when he liked go better and deeper than that, and he wrote some lovely little pieces like, for example, "Daylicht has Mony Een" in his younger days and some refreshingly sharp satire like "Neebors" and the "Obituary Notice" in his later years.

Many of his songs have not appeared in print, and some, though in print, are not easily accessible. He wrote for his friends and he wrote for social occasions, and during the 1914–18 war he was the author of many a camp-fire ballad that helped to keep up the hearts of the troops in miserable surroundings. Sometimes he wrote in English, but mostly his medium was the Scots dialect, which, though perhaps it hampered the full expressions of his philosophy because of its lack of words, at the same time imparted a raciness and a downright quality to his lines which in Scotland and among Scotsmen made them very memorable indeed!

A. K.

The following well-known medical men have died abroad: Dr. MARC TIFFENEAU, professor of pharmacology and materia medica in the Paris faculty of medicine, member of the Académie de Médecine and Académie des Sciences, aged 72; Prof. G. JEANNENEY, head of the departments of clinical surgery and gynaecology at Bordeaux; Prof. LÉON STIÉNON, an eminent pathologist at Brussels, aged 95.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

Sir Howard W. Florey, M.D., F.R.S., professor of pathology in the University of Oxford, has been elected into an Honorary Fellowship at Gonville and Caius College, of which he was formerly a Fellow.

At a Congregation held on March 1 the following medical degrees were conferred:

M.D.—*C. Maynard Heath.

M.B., B.CHIR.—D. A. G. Galton, A. C. Arthur, E. Ellis, J. S. R. Golding, R. H. Ellis, S. M. Hilton, *M. D. King.

* In person.

UNIVERSITY OF EDINBURGH

The Court of the University of Edinburgh and the Corporation of Edinburgh have appointed Mr. Andrew Logan, F.R.C.S., surgical registrar at the Royal Infirmary, Newcastle-upon-Tyne, to the combined post of lecturer in thoracic surgery in the department of surgery of the University and thoracic surgeon to the municipal hospitals of the Corporation.

UNIVERSITY OF GLASGOW

During April and May a series of postgraduate lectures in ophthalmology will be given in the Department of Ophthalmology of the University on Wednesdays from April 3 to May 8, both dates inclusive, at 8 p.m. The meetings will be open to all medical practitioners and senior students interested in ophthalmology. Details will be published in the diary column of the *Supplement* week by week.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

The following surgery lectures will be delivered at the College at 5 p.m. on each day: April 1, Sir Heneage Ogilvie, "Inguinal Herniae"; April 3, Prof. John Morley, "Surgery of the Stomach"; April 4, Mr. R. Maingot, "Surgery of the Spleen"; April 8, Mr. L. E. C. Norbury, "Surgery of the Rectum, with Special Reference to Malignant Disease"; April 10, Prof. H. J. Seddon, "Peripheral Nerve Lesions"; April 11, Sir Gordon Gordon-Taylor, "Surgery of the Colon"; April 15, Mr. W. Rowley Bristow, "Joint Injuries"; April 16, Mr. E. W. Riches, "Surgery of the Prostate"; April 17, Mr. V. E. Negus, "Injuries of the Ear, Nose, and Throat"; April 24, Mr. J. B. Hunter, "Surgery of the Heart"; April 25, Sir Reginald Watson-Jones, "Fractures of the Pelvic Girdle"; April 26, Mr. T. Pomfret Kilner, "Pedicle Grafting." Fellows and Members of the College will be admitted free. A fee of 3 guineas for the course will be charged in the case of others. Tickets may be obtained on application to the Secretary of the College, Lincoln's Inn Fields, W.C.

The Services

Sir Alfred Webb-Johnson, Bt., President of the Royal College of Surgeons of England, has been appointed chairman of the Army Medical Advisory Board in succession to the late Viscount Dawson of Penn.

Col. (Temp. Brig.) F. Harris, C.B.E., M.C., late R.A.M.C., has been appointed Honorary Surgeon to the King in succession to Major-Gen. D. T. Richardson, C.B., M.C., late R.A.M.C.(ret.); and Col. (Temp. Brig.) H. A. Sandiford, M.C., late R.A.M.C., Honorary Physician to the King in succession to Major-Gen. L. T. Poole, C.B., D.S.O., M.C., late R.A.M.C.(ret.).

CASUALTIES IN THE MEDICAL SERVICES

Died on Sept. 27, 1945, by misadventure while carrying out research work at R.A.F. Station, Nijmegen.—Fl. Lieut. Donald Archibald Stickland, R.A.F.V.R.

Died.—Major Ian Donald Cruickshank Veitch, Capt. Bruce Carstairs Jeffrey, R.A.M.C.

Died in Greece as the result of an accident.—Capt. John Vaughan Shepheard, R.A.M.C.

Fl. Lieut. (Acting Squad. Ldr.) WILLIAM MCKEE BONNAR died on Feb. 25 of injuries received in a flying accident in India. He was born in 1917, studied medicine at Queen's University, Belfast, and qualified M.B., B.Ch. in 1939. He was demonstrator in physiology at Queen's University until commissioned in the Medical Branch, R.A.F. Volunteer Reserve, in October, 1941.

Medical Notes in Parliament

Industrial Injuries: A New Committee

The National Insurance (Industrial Injuries) Bill was read a third time without a division in the House of Commons on Feb. 22. In a closing speech Mr. JAMES GRIFFITHS said the Bill had been criticized because it did not provide compensation for nurses who contracted tuberculosis at their work. It did not specify a list of industrial diseases or of workmen who were entitled to claim. Clause 54 was sufficiently wide for him to schedule tuberculosis contracted by health workers if the evidence was strong enough. In the past the task of scheduling industrial diseases had been easier than it would be in the future. Miner's nystagmus, for instance, was fairly easily recognizable. But the Ministry of National Insurance was now reaching the stage where it was not easy to draw the line between disease which was constitutional or arose from natural causes, and the disease arising from industrial causes. That was becoming difficult because mechanization and speeding up were bringing a new range of problems and industrial diseases. A group of "neurotic diseases" would have to be considered. He proposed, therefore, to set up a committee of persons, both medical and lay, to recommend some criteria which would help the Minister to decide the dividing line in these cases. At the moment he was considering the nurses' claim and also one for Raynaud's disease, which had suddenly come into prominence. It was claimed that in one factory scores of cases of this disease were due to the effect of vibratory tools on the hand.

Mr. HOUSE remarked that Mr. Griffiths had not referred to the right of the injured workman to preserve his freedom of choice of practitioner.

Mr. GRIFFITHS said he could not be expected to pronounce on that. Soon the House would consider proposals for a new health service. Mr. House's question would be much more relevant then. The matter must be dealt with in a general way and not as confined to the Industrial Injuries Bill. In conclusion Mr. Griffiths said the number of preventable accidents was still far too high. So was the number of industrial diseases which could be prevented. In South Wales alone the number of persons disabled in one year by pneumoconiosis and silicosis exceeded 5,000.

Pay of Service M.O.s

A White Paper proposing new rates and conditions of pay and allowances for officers in the Navy, Army, and Air Force has been submitted to Parliament. It does not apply to the medical or dental services. Further consideration is being given to the positions of these, but the decisions on them are not contingent on the Government's proposals for a National Health Service.

Medical Services in Singapore

Mr. H. STEWART on March 1 referred to the lack of health and hospital services in Singapore. He asked what the Secretary for the Colonies was doing to make available in Singapore the hospital accommodation now in occupation by S.E.A.C., and what progress was being made in recruiting European staff for the medical service.

Mr. CREECH JONES said the present administration was working strenuously to restore these services in the face of difficulties. It should be possible to announce soon the date of handing over from military to civil administration. A board had been set up in Singapore to ensure the speediest return by the Services of civil property. A high priority would be accorded to hospitals. Medical officers who had been interned were returning as they became fit for a short tour of service. In addition a number of doctors had been or were being selected for appointment to the Colonial Medical Service for duties in Malaya. Others had been engaged on short-term contracts. Supply of medical equipment was steadily going forward.

Austrian Doctors at Home and Abroad

Col. STODDART-SCOTT inquired on March 4 how many doctors of Austrian nationality who had been given a licence to practise were still in this country. Mr. BEVAN replied that a completely up-to-date figure was not readily available, but in November last the number of Austrian doctors in this country who were on the *Medical Register* was approximately 230. He did not know how many had returned to Austria since VE-Day.

On March 6 Col. STODDART-SCOTT asked how many doctors there were 1,000 of the population in the British zone in Austria, and how many doctors in Vienna compared with pre-war. Mr. J. HYND replied that in the British zone of Austria the average worked out at 0.934 per 1,000 of the population as compared with 0.816 before the war. In the city of Vienna there were to-day some 2,800 doctors compared with 4,100 before the war. Taking into account the decrease in population, the proportion of doctors had been only slightly reduced. The figures for the pre-war period in the zone were one doctor per 1,225 of the population, and to-day one doctor per 1,070 of the population. In Vienna there was one doctor for every 468 of the population pre-war, and to-day one doctor to every 521.

Atomic Research in Britain

Mr. ATTLEE announced on March 5 that the programme of atomic research in this country was not limited by financial considerations but by the numbers of trained scientists and the material resources available, especially in building and engineering equipment. Within these limits this programme of research was being developed as rapidly as possible. Expenditure on it for the year 1946–7 was estimated at approximately £2,800,000.

Medical Care of Colonial Civil Servants

Squad Ldr. DONNER asked on March 6 whether members of the Colonial Civil Service invalided home or having to undergo medical treatment while on leave could obtain financial help towards the cost of treatment when this was necessitated as a result of injury or disease contracted in the course of duties in the colony. Mr. CREECH JONES said it was the practice for Colonial Governments to pay the fee for an examination by a consulting physician together with any expenses incurred in the diagnosis of the officer's complaint. Except for those on very low salaries, Colonial civil servants were not entitled to free treatment in this country, but could get treatment, including operations, at special rates under arrangements made with the Seamen's Hospital Society and the Royal Infirmary, Liverpool. Colonial Governments were usually willing to give sympathetic consideration to applications for assistance from officers whose medical expenses were unduly burdensome.

Hospitals in the National Health Service

On March 7 Sir P. MACDONALD asked whether the Minister of Health intending to include the voluntary hospitals in his legislative proposals for nationalizing the medical profession, and if he would make their position clear so as to enable these hospitals to make plans for the future. Mr. BEVAN said the Government's proposals for a National Health Service would be submitted to the House as soon as possible. He did not think he ought to anticipate them in any way at that stage.

Medical News

The Royal Society of Medicine has arranged a series of special meetings on practical problems which faced medical science during the war. They will be held from March 18 to 22, and March 25 to 29, at 1, Wimpole Street, at 5 p.m., the first week being devoted to problems of protection, and the second to problems of efficiency. The subjects of the first half of the series are: March 18, cold and heat, with Sir John Anderson in the chair; March 19, burns, BAL, missiles, and blast, with Sir Henry Dale in the chair; March 19, acceleration, with Viscount Falmouth in the chair; March 21, applications of anatomy and physiology, with Prof. E. Le Gros Clark in the chair; March 22, diseases in the field, with Lieut.-Gen. Sir Alexander Hood in the chair. During the second week problems of efficiency will be discussed, as follows: March 25, visual and auditory, with Sir Ernest Rock Carling in the chair; March 26, psychological, with Sir Lionel Whitby in the chair; March 27, respiratory, with Sir Henry Tidy in the chair; March 28, nutritional, with Sir Frederick Leith-Ross in the chair; March 29, restoration of efficiency, with Lord Horder in the chair. Fellows of the R.S.M. will be admitted without ticket; Fellows bringing guests should apply to the Secretary of the Society for admission tickets for their guests.

A joint meeting of the Microbiological and Nutrition Panels of the Food Group of the Society of Chemical Industry will be held on Wednesday, March 20, at 6.30 p.m. in the rooms of the Chemical Society, Burlington House, Piccadilly, W., to discuss a paper by Dr. E. C. Barton-Wright on amino acids and the metabolism of the cell.

Our obituary notice of Mr. Robert Worthington, F.R.C.S., of Exeter, published on Aug. 25 mentioned that besides being one of the best-known surgical specialists in the West of England he was also a man of more than local fame as an accomplished water-colour painter. During the last twenty years of his life he developed his native skill with the brush and devoted much of his leisure to water-colour. A memorial exhibition of his works is to be held in London at the rooms of the Fine Art Society in Bond Street, W., starting on Wednesday next, March 20.

The Lord Mayor of London took the chair at the 73rd annual general meeting of the Metropolitan Hospital Sunday Fund, held at the Mansion House. Mr. C. J. Holland-Martin, vice-president, said that they were anxiously awaiting the announcement of the Government's plans for the hospital system of the country. In the meanwhile there was danger that, in the uncertainty about the future, the immediate needs of the patients might be forgotten. Money would be needed by the hospitals in the interval before any new scheme could come into effect.

Workers in the motor-car branches of the Nuffield organization are being asked to take part in research to be conducted by Prof. J. A. Ryle, Fellow of Nuffield College and Director of the Institute of Social Medicine at Oxford, into the causes of gastric and duodenal ulcers.

At the meeting of Senate of the Queen's University of Belfast on Nov. 21, 1945, Mr. C. H. G. Macafee, F.R.C.S., was appointed Professor of Midwifery and Gynaecology. Prof. C. G. Lowry, F.R.C.S., who was appointed Professor of Midwifery in 1920 and Professor of Midwifery and Gynaecology in 1937, was accorded the rank of Emeritus Professor.

Mr. E. Stanley Evans, M.B., B.S., F.R.C.S., has been appointed medical superintendent of the Lord Mayor Treloar Cripples' Hospital and College, Alton, Hants, and took up his duties there on March 5. Mr. Evans was previously medical superintendent of Queen Mary's Hospital for Children, Carshalton.

At a meeting of the Royal Society of Edinburgh, held on March 4, the following members of the medical profession were elected Fellows of the Society: Prof. Daniel Fowler Cappell, M.D., Hugh Shaw Dunn Garven, M.D., Prof. Stuart M'Donald jun., M.D., and Prof. Richard Loraine de Chasteney Holbourne Saunders, M.D.

Sir Drummond Shiels, M.B., is a member of the committee appointed by the Prime Minister to "consider the future of the terraces adjoining Regent's Park from all aspects, architectural, town planning, and financial, and to make recommendations as to their future adaptation, or replacement, to meet modern requirements."

It is announced that Bournemouth Council is to take over the U.S. Army hospital at St. Leonards, near Ringwood in the New Forest, consisting of huts, for use till a permanent hospital can be provided.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* there was a further fall in the notifications of acute pneumonia (262), but other infectious diseases increased in prevalence. The rises included whooping-cough 303, dysentery 151, measles 98, diphtheria 21.

The largest falls in pneumonia were Lancashire 79, Middlesex 54, Warwickshire 35. Cases of diphtheria showed increases in Lancashire 19 and London 10, and a decrease of 12 in Yorkshire West Riding. The only county with a marked increase in the notifications of measles was Lancashire 61. The rise in whooping-cough was greatest in Yorkshire West Riding 86, Lancashire 38, Middlesex 34. The only marked fluctuations in the local returns of scarlet fever were increases in Lancashire 39 and London 26.

Notifications of dysentery increased in many areas. The only new outbreak during the week was in Hertfordshire, Bushey U.D., where 74 cases were notified. Other large returns were: Lancashire 54, Leicestershire 30, London 29, Northumberland 22. Bedfordshire 17, Worcestershire 15, Middlesex 14, Northamptonshire 14, Essex 14, Yorkshire West Riding 14, Norfolk 13, Warwickshire 13, Gloucestershire 12.

In *Scotland* fewer cases of primary pneumonia (91) and scarlet fever (42) were notified, while an increase was recorded for measles 201, diphtheria 21, and dysentery 21. The chief centres of dysentery were the cities of Glasgow 12, Dundee 12, and Edinburgh 10.

In *Eire* there was a rise in pneumonia (59), and in enteritis and diarrhoea (17). In both instances the rise was due to the experience of Dublin C.B.

Scotland's Birth Rate

The preliminary returns for 1945 show that the birth rate of 16.9 per 1,000 was the lowest ever recorded; the previous lowest was 17.1 in 1940. The infant mortality was 56 per 1,000 live births, and the maternal mortality reached a new low level at 2.9 per 1,000 live births.

Week Ending March 2

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 1,232, whooping-cough 1,605, diphtheria 501, measles 1,583, acute pneumonia 860, cerebrospinal fever 70, dysentery 323, paratyphoid 23, typhoid 8. Five of the eight cases of smallpox were imported. There were 123 deaths attributed to influenza in the great towns.

No. 8

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Feb. 23.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1946 (a)	(b)	(c)	(d)	(e)	1945 (Corresponding Week) (a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	71	8	24	—	—	76	3	37	2	2
Deaths		2	—				1	2		
Diphtheria	510	33	136	51	19	457	17	136	104	25
Deaths	12	1	2	2	—	8	—	1	2	—
Dysentery	406	29	62	—	2	393	34	135	3	—
Deaths				—	—				—	—
Encephalitis lethargica, acute	2	—	—	—	—	3	—	1	—	—
Deaths							—			
Erysipelas			41	12	4			47	17	3
Deaths		—					—			
Infective enteritis or diarrhoea under 2 years				40					23	
Deaths	52	7	10	9	4	52	8	8	7	2
Measles*	1,587	389	393	69	1	23,216	977	453	55	93
Deaths	1	—	2	—		21	2	2	—	1
Ophthalmia neonatorum	64	4	15	1	1	78	3	11	1	—
Deaths										
Paratyphoid fever	4	1	—	—	—	6	1	—	1 (B)	—
Deaths	—	—	—	—	—	1	1	—	—	—
Pneumonia, influenzal	1,125	57	66	25	15	1,118	61	12	13	7
Deaths (from influenza)†	141	17	13	9	4	51	4	4	—	1
Pneumonia, primary			333	87				279	12	
Deaths		34		13	14		39		19	10
Polio-encephalitis, acute	1	1				—	—			
Deaths		—					—			
Poliomyelitis, acute	4	1	—	1	—	3	—	—	3	—
Deaths		—					—			
Puerperal fever		5	24		—		3	12		—
Deaths										
Puerperal pyrexia‡	171	12	17	—	1	153	16	18	—	—
Deaths		—					—			
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,307	116	162	18	33	1,544	49	228	22	46
Deaths	2	—	—	—	—	—	—	—	—	—
Smallpox	1§	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Typhoid fever	7	—	1	8	—	6	1	1	7	—
Deaths	—	—	—	1	—	1	1	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Whooping-cough*	1,632	133	98	43	6	1,539	69	151	72	20
Deaths	6	1	—	1	—	6	—	2	—	1
Deaths (0–1 year)	414	57	64	38	17	445	47	67	57	22
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	5,195	820	687	259	167	5,503	763	730	275	130
Annual death rate (per 1,000 persons living)			15·1	16·6				16·6	17·7	
Live births	7,263	1,035	910	416	251	7,010	792	821	441	247
Annual rate per 1,000 persons living			18·3	26·7				16·4	28·5	
Stillbirths	256	37	39			192	17	27		
Rate per 1,000 total births (including stillborn)			41					32		

* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

‡ Includes puerperal fever for England and Wales and Eire.

§ Imported case.

Letters, Notes, and Answers

All communications with regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE: EUSTON 2111. TELEGRAMS: *Aitiology Westcent, London.* ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.
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ANY QUESTIONS?

Chronic Villous Synovitis

Q.—*A woman aged 45 has had a chronic synovitis of the right knee for ten months. X-ray examination shows no bony change, but some thickening of synovial membrane is now evident. What is the condition and what the cure, and would a biopsy prove anything?*

A.—The case appears to be a chronic villous synovitis of the type to which women at or near the menopause seem to be especially susceptible. The condition is often very resistant to treatment, but tends to pass into osteo-arthritis, which is not usually of a severe type, and with this change acute pain gives way to slight stiffness and crepitus on movement. While endocrine factors may have a predisposing influence, it is doubtful if they have any causative effect, and when one joint only is affected a slight strain is the most usual direct cause. Careful investigation should be made for any infective focus or source of toxic absorption, particularly in the pelvis and alimentary canal, and the blood uric acid might be estimated to exclude chronic gout. It is important to support the joint and to avoid long standing and any unnecessary movement; a blocked leather knee-cap or a Howard Marsh cage-splint might be worn with advantage for a few months; the joint should be moved through the full range morning and night to guard against the formation of adhesions. Drug treatment is of doubtful value, but a combination of iodine and thyroid might be useful, and full doses of vitamin C have been advised. Locally, ionization with potassium iodide may help. If these measures are ineffective and the symptoms are severe enough to demand more drastic treatment the opinion of an orthopaedist should be sought as to the expediency of synovectomy, which is practised in the U.S.A. more often than in this country and, it is claimed, with good results.

Nail Growth and Nail-biting

Q.—*What are the factors governing the growth of the finger-nails? Is there any method whereby such growth can be speeded up? What are the best methods to stop nail-biting in a child who seems to have a peculiar liking for aloes and other deterrents?*

A.—The growth of the nails, like that of epidermis and hair, is governed by the vascular and nervous control of the part. On an average nails grow about 1/8 in. (3 mm.) a month, but there is variation between individuals, and in the same individual, depending upon variations of health. Growth cannot be influenced by drug treatment, though *x*-ray therapy locally appears sometimes to retard it. I know of no method of increasing the rate of growth.

Nail-biting has nothing to do with nail growth and is a problem in psychological medicine, though commonly of no major significance. The temperament and environment of the child and the make-up and attitude of the parents probably call for attention, and a child-guidance or psychiatric expert might be consulted. A minor disturbance may start what becomes merely a bad habit, and it is probably wise to avoid giving the matter undue prominence and wasting time on local treatment to the nails, which may only increase the child's desire to bite them. (See also answer given on March 24, 1945, p. 432.)

Oedema in a Hemiplegic Limb

Q.—*A woman of 61, who has had varicose veins and a poor circulation all her life, had a thrombus of the internal capsule seven years ago causing paralysis of her left side. Since then she has had swelling and oedema, which disappears on lying down, of the left foot and leg. Massage helps it, but produces no permanent benefit. What treatment should be adopted?*

A.—Oedema in a hemiplegic limb is usually due to mechanical immobility and retarded venous circulation. The presence of varicose veins would enhance the tendency to oedema, and there is, of course, the possibility of an associated thrombosis of one of the veins of the leg. No active treatment is indicated, but the patient should prop the foot up when resting in a chair. The massage to the limb should be accompanied by passive and, if possible, active movements of the ankle- and knee-joints.

Trench Mouth

Q.—*What is the best treatment of so-called trench mouth?*

A.—Experience earlier in the war led workers to concentrate on the treatment of trench mouth by local measures. For this purpose a 20% solution of chromic acid was used, followed by the application of 20-volume hydrogen peroxide. For subacute cases, and for the later stages of the acute cases, packing between the teeth with a paste of zinc oxide and oil of cloves was most effective. Recently, however, it has been shown that the spirochaetal infection of the mouth and throat which is responsible for trench mouth can be completely overcome in the great majority of cases by intramuscular injections of penicillin, 100,000 units a day for three days or less, with or without the use of mouth-washes of hydrogen peroxide. It is probable, therefore, that the ideal treatment for trench mouth is a short course of systemic administration of penicillin plus subsequent dental treatment to clear up gingival flaps, caries, malocclusion, etc.

Causation of Schizophrenia

Q.—*In Huntington's chorea when an affected female marries a normal male only 35% of the children have the disease, instead of 50%; in the remaining 15% the necessary determining circumstances are not there. In schizophrenia many who are believed to possess the hereditary tendency do not develop the disease owing, presumably, to lack of determining factors. This implies that hereditary potentialities may be dormant throughout life, or may be precipitated only by appropriate influences. At the age of 30 a patient whose personal and family history was good, with no evidence of mental disorder, had to leave his home and a lucrative calling to join the Navy. He was suddenly introduced to unfamiliar surroundings, he went through severe bombing, and for the rest of his career was faced with the certainty of personal danger. He developed schizophrenia and is now in a mental hospital. Is it possible that these circumstances initiated a mental disorder which in times of peace might have remained hidden and unsuspected?*

A.—The present state of our knowledge is very much as described. Even in a clearly hereditary illness such as Huntington's chorea not everyone who has the genetic potentiality develops the disease. In schizophrenia the proportion who do is probably still smaller; studies with uniovular twins indicate that not more than two-thirds of the genetically predisposed become schizophrenic. Environmental factors must therefore play a part. But we have practically no knowledge of their nature, apart from some evidence that head injury may precipitate the illness. The incidence of schizophrenia does not go up in wartime, which would lead one to think that the hardship and stress, which are prolific causes of neurotic breakdown, are not the factors which have a causative effect in schizophrenia. In the case described there is certainly a presumption that the radical change in life associated with war service provided a necessary precipitating cause for the illness, and this view would probably be shared by a Ministry of Pensions tribunal. Another point is worth raising. Quite a number of men are invalided from the Services with a diagnosis of schizophrenia which time proves to be incorrect. Men who break down in combat sometimes show clinically a schizo-

phrenic type of picture; and they may still be so regarded at the time of invaliding. Recovery, however, takes places without subsequent deterioration or relapse. The possibility of a mistaken diagnosis should perhaps be kept in mind in the present case.

Vitamin E in Neuromuscular Disorders

Q.—*What are the clinical applications of vitamin E in the treatment of neuromuscular disorders?*

A.—Vitamin E has been widely used in the treatment of neuromuscular disorders—conditions of differing pathology which have in common wasting and weakness of voluntary muscles. These disorders include particularly the motor neurone diseases and the myopathies. In assessing the results of treatment with vitamins it must be remembered that they have all been used in all the incurable diseases, and that both the patient and the observer look for some benefit. It is natural, therefore, that good results should be described, and that these results should be ascribed by some to a specific action of the vitamin upon the causal lesion. So with the distressing progressive diseases of the neuromuscular mechanism, enthusiastic reports have been given of the effects of administration of vitamin E in patients with these diseases. Although the manufacturers of vitamins still quote the enthusiastic papers, these reports have not withstood the test of time; investigations, one of which was carried out by workers of the Medical Research Council, have failed to show any improvement which was not paralleled by other forms of treatment used as controls.

Varicella and Herpes Zoster

Q.—*A person with herpes zoster may infect another with varicella, but is the reverse the case?*

A.—Although varicella following contact with herpes zoster is common, the converse is so rare that coincidence may be the explanation of the occasional examples in some people's experience.

Quinine and Impotence

Q.—*What is the justification, if any, of the idea prevalent among civilians and soldiers that quinine causes impotence?*

A.—It is probable that the idea that quinine causes impotence is derived from the use of quinine as a constituent of contraceptive pessaries; quinine salts in sufficient concentration when brought into contact with spermatozoa do kill them. There is no evidence that the administration of quinine reduces the number of motile spermatozoa in the seminal discharge. It should also be remembered, so far as soldiers are concerned, that some soldiers always suspect that any medicine prescribed for regular use is intended to depress sexual desire.

Examining for Drunkenness

Q.—*What are the usual methods of examination in the case of persons said to be drunk in charge of a motor-car? Are blood tests usually done in England? Is the doctor bound to inform the person beforehand that he is examining at the request of the police? What view is a judge likely to take in the event of a doctor's refusing to go to the police station to examine?*

A.—Examinations for drunkenness are dealt with in the standard textbooks of forensic medicine by Glaister, Sydney Smith, and Taylor. Briefly, the examining doctor must direct his mind to the question whether the prisoner was, while he was driving the car, so much under the influence of alcohol as to be unable to control the vehicle properly. The doctor should consider the prisoner's behaviour, speech, gait, breathing, and clothing. Evidence that alcohol has been taken may consist (Glaister) of its smell in the breath, suffusion of the conjunctivae, flushing of the face, tachycardia, certain abnormal conditions of the tongue, lips and pupils, and tremors. To determine whether the alcohol taken has disturbed normal behaviour the doctor may ask the prisoner the date and time, his address, what he was doing when arrested, and where he is now. He should test the prisoner's vision, co-ordination, and writing. He should be on his guard against neurological disorders, an overdose of insulin, and idiosyncrasy to drugs. All these conditions may be masked by the presence of a small quantity of alcohol.

Blood-alcohol tests are not often done in England, because they need special apparatus and skill which are rarely available. Moreover, their result is not precisely connected with the question of the prisoner's ability to drive a motor-car, though of course a negative finding will dispose of an accusation of drunkenness, and a high positive finding may be conclusive evidence against the prisoner. The urine-alcohol test is just as useful, and has the advantage that urine is easier to obtain. Specimens of either blood or urine should be taken by, or under the direction of, the pathologist who is to make the test. No prisoner is obliged to provide evidence against himself, and examination without consent is technically an assault. The doctor must, therefore, not only inform the prisoner that he proposes to examine him, stating truly the purpose of his examination, but must obtain the prisoner's consent. If the prisoner is unconscious or inaccessible consent to any reasonable examination may be presumed, for his health may be in danger. Blood should not be withdrawn from an unconscious person for test, but if he voids urine this may be tested without his consent. A doctor requested to go to examine a prisoner is not obliged to comply; his action in the matter will not be relevant to subsequent proceedings, and even the fact that he has been asked to go is not likely to come before the court.

Sunbathing in Pulmonary Tuberculosis

Q.—*Why is sunbathing contraindicated in pulmonary tuberculosis? One reason sometimes stated is that sunbathing may, by dilatation of the pulmonary blood vessels, precipitate haemoptysis, but this cannot be the whole story. Is it the ultra-violet light, the burn, or the rise of body temperature during sunbathing that causes the damage?*

A.—Sunbathing is contraindicated in pulmonary tuberculosis because there is a general belief, founded upon good evidence, that extensive exposure of the skin to sunlight produces a focal reaction around tuberculous pulmonary lesions, leading to their extension. It is this activation which causes haemoptysis, not dilatation of the pulmonary vessels. The causal factor seems to be the action of ultra-violet light on the skin, but the mechanism is unknown. Ultra-violet irradiation of the skin is known to produce chemical changes—e.g., the elaboration of vitamin D—which affect the body as a whole, and the liberation of some chemical substance may be responsible for the unfavourable effect of ultra-violet light in pulmonary tuberculosis. Patients suffering from this disease should expose themselves to the sun as little as possible.

Side-effects of Pituitary Irradiation

Q.—*Is there any literature on x-ray therapy of the pituitary with reference particularly to the untoward side-effects, such as obesity?*

A.—A quick glance at some of the literature rather bears out the implication of this question—namely, that although the theoretical dangers of pituitary irradiation are mentioned by nearly all writers there appear to be few published records of cases where ill effects have been seen. J. B. DeLee and J. R. Greenhill in the 1937 and 1938 *Year Book of Obstetrics and Gynecology* review several articles on *x*-ray therapy to the pituitary, and mention temporal alopecia and parotitis as recorded complications. C. Mazer and G. Boer (*Amer. J. Obstet. Gynec.*, 1939, **37**, 1015) noted temporary amenorrhoea in 1 out of 26 women with regular menstrual cycles treated with low-dosage irradiation, and conclude that the margin of safety is small.

It would appear that most workers who have used *x*-ray therapy for conditions such as states of menstrual tension, anovular menstruation, and menopausal symptoms have been so impressed with the possible dangers of interfering with various functions of the pituitary (gonadotrophic, thyrotrophic, diabetogenic, etc.) that they have used very small doses, and adverse effects have therefore rarely been seen. This does not mean, however, that rather larger doses—as might be necessary for some cases of menstrual migraine—are also free from side-effects. Thus C. Mazer and S. L. Israel (*Menstrual Disorders and Sterility*, Heinemann), after a large experience of low-dosage irradiation, say that "large doses, such as are employed in the treatment of pituitary adenomas, may produce lasting pituitary deficiency and alopecia. The risk is considerable." The writer

has personal knowledge of three patients treated with moderately large doses, one with diabetes mellitus and two with menstrual migraine thought to be associated with calcification of the roof of the sella turcica. Thereafter two of these patients rapidly gained in weight to the extent of 2 to 3 stones (12.6 to 18.9 kg.).

Inheritance of Acquired Characteristics

Q.—*Are acquired characteristics ever inherited?*

A.—The generally accepted view of biologists to-day is that there is no evidence that acquired characteristics are ever inherited in the straighforward manner presumably implied in the question. For example, parents who live in the Tropics and are heavily sunburned do not have children with darker skins than their cousins whose parents live in England; nor have generations of house-training of dogs produced puppies which need no training.

The accepted view is that the genetic mutations responsible for variability occur in a random manner, and the most favourable in any given environment are then selected and so tend to become the most frequent. Many experiments have been done which purport to show a straightforward inheritance of acquired characteristics, but so far not one has been satisfactory, or has been impossible to explain on some other basis, as, for example, selection in a population which was not homogeneous at the beginning of the experiment.

To ask, "Are acquired characteristics inherited?" is not to put the question in its most useful form. Since any hereditarily determined character of the offspring must be transmitted in the germ cells of an organism, it is more profitable to ask whether, and if so how, external agencies can affect the germ cells. They will do so only provided they affect the immediate environment of the germ cells by causing some alteration in the metabolism or chemical constitution of the parent. They will do so most easily in organisms whose germ cells are least protected, and whose own constitution is most easily affected by external alterations. Looking at the question from this angle a considerable amount of work has recently been done on yeasts, bacteria, etc., in which there is no clear distinction between soma and germ plasm, and the reproducing cell can be directly acted on by an external agency. It has been found possible, for instance, to accustom *Bacterium lactis aerogenes* to utilize maltose, which it is normally incapable of doing. After a number of generations this acquired ability becomes fixed and inherited. The exact way in which the altered metabolism becomes hereditarily fixed is still unsettled, but if a gene can be reached by an "external" agency and acted upon in such a way as to alter it, there is nothing surprising in the fact that the gene reproduces itself in the altered form. It would be much more surprising if it did not. This direct altering of the chemical processes going on in a reproducing cell by changing its environment is, however, something very different from what is usually implied in the expression "inheritance of acquired characteristics" in higher organisms.

Summing up, an acquired characteristic can be inherited only if it is of such a type as to affect the germ cells directly and in such a way as to alter their constitution in a manner which not only will be reproduced in their subsequent divisions but will also cause the same structural or physiological changes in the resulting offspring as were originally produced in the soma of the parent. Such an event would seem highly improbable in any organism of high complexity, and there is no satisfactory evidence of its ever having occurred.

Infection from Dead Bodies

Q.—*The bodies of persons who have died from an infectious disease in a fever hospital may be removed to their homes before burial. Is there any evidence that infective organisms can survive in a body after death, and, if so, for how long? Has infection ever arisen from the body of a patient who has died from diphtheria? What is the current practice among hospital and health authorities on this question?*

A.—The diphtheria bacillus is known to survive outside the living human body—for example, in dust—for as long as 102 days. It has been isolated in the virulent state from secretions of corpses shortly after death, but obviously bodies are not kept without preservation for a sufficient length of time to determine how long the bacillus may survive in this medium. It may reasonably be assumed that it does so for the short time before burial.

The procedure is governed by Section 163 of the Public Health Act, 1936, which enables the M.O.H. or other registered medical practitioner, by certificate, to prevent the removal of a dead body from a hospital except to a mortuary or a place of burial. The practice no doubt varies, not only from place to place, but also locally in different circumstances, depending on such matters as the housing conditions of the family. The tendency is to attach less weight to this procedure, as the risk of expulsion of diphtheria bacilli from a properly laid out corpse is slight. The writer knows of no proved instance of transmission of infection from a dead body, but the tracing of channels of infection is so difficult that negative observations of this kind cannot be regarded as conclusive.

Local Penicillin in Gonococcal Urethritis

Q.—*In the literature on penicillin I have not seen mention of its local application in gonococcal urethritis. Has any work been done on urethral instillations by means of a small bulb syringe, retaining the solution for a time by a light clip on the penis? Provided retention of the solution could be comfortably borne for a specified period, would it not be a more economical method of using penicillin?*

A.—We have not come across any published work on the above procedure, but we know (personal communications) that it has been tried. Results have not been very satisfactory, presumably because in the vast majority of cases of gonorrhoea, if not in all, the posterior urethra is infected before treatment is begun, and it is neither usual nor wise to attempt to instil a solution of a drug past the compressor urethrae muscle during the acute stage. Simple instillation of a solution of penicillin would be more economical than injection, and might prove effective if it were carried out in the *very* early stages; but even in treating infected wounds surgeons commonly use penicillin parenterally as well as locally. (See also answer to a question published on Jan. 19, p. 115.)

INCOME TAX

Sale of Practice

W. I. sold his practice last October and has had a request from the local inspector of taxes for details of the sale considerations and a copy of the written agreement for sale. He asks whether the inspector has any legal authority for such a request. The practice has been assessed on the basis of "bookings."

*** The inspector has no such legal authority, but in those matters he acts as an officer of the Inland Revenue endeavouring to agree the taxpayer's liability before the case goes to the Commissioners, who, in the event of an appeal, can call for such evidence as they may require. The request is one which is sometimes made on the ground that the sale price of a practice is to some extent an index of the probable gross earnings. Unless W. I. has some reason for declining to give the particulars it may be best to comply with the request; an alternative would be to refuse compliance until the demand is formally endorsed by the Commissioners.

Pay-as-you-earn: Employment in Forces

E. R. was a salaried worker before he joined the Forces in January, 1942. As he was in the Forces throughout 1943–4 he received no "forgiveness" of tax for that year, although he had to clear off seven months' arrears of tax while suffering "current" deductions from his pay. Has he any claim to refund?

*** The promise of the former Chancellor—to which E. R. refers—was that some equitable adjustment should be made where there was an overlapping tax payment and where the tax holiday which the taxpayer was entitled to expect had been lost through the operation of "pay-as-you-earn." If E. R. becomes an employee when he leaves the Forces (but not if he then becomes assessable under Schedule D) he will apparently come within the promised arrangement. It is understood that particulars can be obtained from the Chief Inspector of Taxes, The Hydro, Llandudno, but E. R. can do nothing effective in the matter until he leaves the Forces and has subsequently been in employment.

Casual Locumtenency

D. J. while holding a hospital appointment obliged a general practitioner by acting as a locumtenent during a holiday. Is the payment he received liable to income tax?

*** Yes. The payment is not liable under Schedule D, but falls within the scope of Schedule E.

LETTERS, NOTES, ETC.

Early Diagnosis of Malignancy

Dr. FREDA M. LUCAS (London, E.9) writes: Is it possible that there is any member of the profession who feels free to cast a stone concerning the early diagnosis of malignancy? I saw first about four months ago a patient who had a painless swelling in the upper medial quadrant of the breast. No glands were palpable. There was evident mastitis; but there was undoubtedly a hard core to the fairly defined area of mastitis, which had to be considered suspicious. I referred the patient to a particular surgeon (of an excellent voluntary hospital), who concurred regarding the nature of the case and wished to operate. The patient, however, was rather alarmed at the "free hand" naturally required by the surgeon, and asked me for another letter to another hospital recommended by the ubiquitous relative. As this second hospital is also a well-known London (voluntary) hospital, I complied; and the patient attended on about four occasions, seeing both senior and assistant surgeons. Far from satisfied, however, that the belladonna plaster with which they adorned her breast was indeed helping, she returned to me, and I persuaded her to put herself in the hands of the first surgeon and hospital. The breast was removed, but no glands were cleared.

I have just heard, from the department to which she has now been referred for *x*-ray therapy, that pathological examination of the excised tissues revealed early but definite malignant changes. I humbly suggest that not only the general practitioner need fear the spectre of the "missed" case, and that, while no branch of the profession can or should claim infallibility, it suits us all better to walk warily, and be mindful of the beam in our own eye ere we judge the motes of others.

Miscarriages and Congenital Syphilis

Dr. C. W. F. MCKEAN writes from the Prince of Wales's General Hospital (Tottenham): May I comment on your expert's answer to the question on miscarriages and congenital syphilis (Jan. 12, p. 75). He states that third-generation syphilis is usually regarded as proved possible, if very rare, and that a congenital syphilitic can become reinfected after all evidence of active disease has subsided. I presume the latter must refer to a serological as well as a clinical cure, but it is not clear whether cure by treatment or by Nature is meant. Actually, statistics suggest that a surprisingly large proportion of acquired infections are cured by Nature without any treatment, and this must be regarded as more surely proved than the possibility of third-generation syphilis. The proportion of congenitally infected babies similarly cured would surely be as high, and some infections serious enough to cause congenital stigmata to develop may be so cured. Certainly we have all seen people who we suspected were congenitals but had negative bloods. Therefore, those very rare cases of apparent third-generation syphilis may actually be babies born to mothers who, though themselves congenitals bearing stigmata, were cured by Nature and then reinfected, thus rendering their blood Wassermann-positive again. The extremely high incidence of syphilis certainly renders reinfection easily possible.

Abortion and the Birth Rate

Dr. ANNE M. ANDERSON (Edinburgh) writes: A letter from Dr. B. Dunlop (Feb. 2, p. 192) advocating a relaxed abortion law does not come as a surprise in a largely pagan country such as this, but it calls for comment. Dr. Dunlop's proposal is to have the existing abortion law relaxed so that that section of the community which is producing and bringing up large families may be allowed to kill off its unborn children if and when it so desires. Is it likely that this very section of the community that has been, and is, doing the right thing before God and by the State in bringing up these large families, and which neither knows nor wishes to know birth prevention methods, would accept such an invitation to murder as would be extended to it under a relaxed abortion law even in the name of "liberty"?

Service Conditions and the Ethical Code

"SURG. LIEUT., R.N.V.R.," writes: The letter from "Hippocrates" (Jan. 12, p. 76) is an example and a warning of what can happen under a State system. The indifference displayed to this dental officer's feelings is all too common, and the attitude engendered by the doctrine, so persistently taught in the Services, that one is a medical officer before a doctor. Having seen this in practice most of us believe that this is really detrimental to the Service that preaches it; certainly a fighting man's first duty is to his Service, but he fights better for believing that his M.O. is his friend rather than his superior officer, or his padre his confidant and not the mouthpiece of his C.O. In a recent letter to the *Birmingham Post* Dr. Stanley Barnes writes: "If the doctor is to be paid by the State—in other words, if he is paid indirectly and not directly by his patient—can anyone with his eyes open believe that the State will not insist upon disclosure not only of diagnosis but also of facts leading up to diagnosis? Whatever promises of official secrecy may be given, there can never be that feeling of security against disclosure which exists where the secrecy of a private doctor is alone at issue." If the new health services are to be a success—and there is no reason why they should not—it is important that their organizers should realize that our first duty is to the sick man or woman not to the local authority, and that we ourselves should reaffirm our discipleship to Hippocrates not to the newer loyalty of the modern State.

Chilblains and Nicotinic Acid

Dr. LEONARD S. CALVERT (Welton, E. Yorks) writes: The interesting letter by Dr. W. Gordon (Feb. 9, p. 218) prompts me to write of yet another condition treated by nicotinic acid with success. A young woman aged 22 had suffered from chilblains of both legs every winter for 6 years, the legs hardly becoming normal in the summer. When first seen she had large bluish, raised, cold, indurated patches the size of a hand extending from the ankle to the knee on both legs. Another woman aged 27 had suffered from chilblains with ulceration on the lower half of both legs every winter for 10 years. Both patients had previously received thyroid, calcium, etc., and, in the second case (? Bazin's disease), gold on several occasions without success. Each patient was given nicotinic acid 100 mg. t.d.s. and vitamin B_1 3 mg. t.d.s. A slight transient flushing or prickling sensation of the skin of the whole body, more particularly in the legs, was experienced by both following each dose. In both the chilblains rapidly subsided. The legs assumed a normal contour and warmth. All burning and irritation disappeared. Only a slight bluish discoloration remained. This occurred in three weeks.

Medical Supervision in Boys' Clubs

Mr. IAN M. LESLIE (chairman, London Federation of Boys' Clubs, 222, Blackfriars Road, S.E.1) writes: Recently through your columns (Jan. 12, p. 69) I asked doctors in London if they would be prepared to give a few evening hours, weekly or fortnightly, to "vetting" working boys in clubs affiliated to the London Federation of Boys' Clubs. May I report progress? Twenty-two replies have been received, and as a result nineteen doctors have been or will shortly be placed in direct touch with clubs in convenient districts—to the great benefit of the clubs and their 14–18-year-old members and, I also dare to hope, to the enjoyment of the doctors concerned. Two replies came from consultants who have offered their services to our boys in their particular fields; I have no doubt that club leaders with boys needing special treatment will gratefully make use of this generous offer. There remains one reply for which I have not yet accounted—from a young doctor anxious to help but shortly taking up an appointment in Bristol. He has been placed into touch with the Bristol Federation of Boys' Clubs, who are delighted to have his services, and it has occurred to me, so generous has been the response from London, that there must be many medical men outside the Metropolis who would similarly be glad to help in a boys' club near at hand. There are over 2,000 such clubs affiliated to the National Association of Boys' Clubs in England, Scotland, and Wales, and hardly a city or town that has not got at least one. I am sure that the chairman of the National Association would be glad to place doctors outside London into touch with their nearest club. His address is: The Lord Aberdare, chairman, N.A.B.C., 17, Bedford Square, London, W.C.1. Meanwhile, it only remains for me warmly to thank those who have responded to London's appeal and you, Sir, for setting rolling a ball which I hope will achieve perpetual motion.

First Aid for Cresol Burns

Dr. L. B. BOURNE (London, N.5) writes: In the answer to this question (Feb. 2, p. 191) no mention is made of prevention. A large number of burns come under my notice during the course of the year as a result of splashes from hot zinc chloride, usually caused by a soldering iron being dipped in fluid. We also use hydrofluoric acid in quantity, and this is likely to cause burns if preventive measures are not used. A good barrier cream will reduce considerably the risks not only from hot cresol but from most industrial skin hazards. It must be emphasized that a specific barrier cream against cresol should be used. There are a number of creams being offered by the makers to protect against "all risks." These should not be used under any circumstances.

Disclaimer

Dr. C. B. MOLONY, resident medical superintendent, Waterford Mental Hospital, writes: My attention has been drawn to a sensationally headed and luridly worded article on schizophrenia which appeared in an English Sunday newspaper on Feb. 24, and in which my name and address have been quoted. I wish to dissociate myself from the article in question, and have written a letter of protest against its publication in the form in which it appeared to the editor of the paper.